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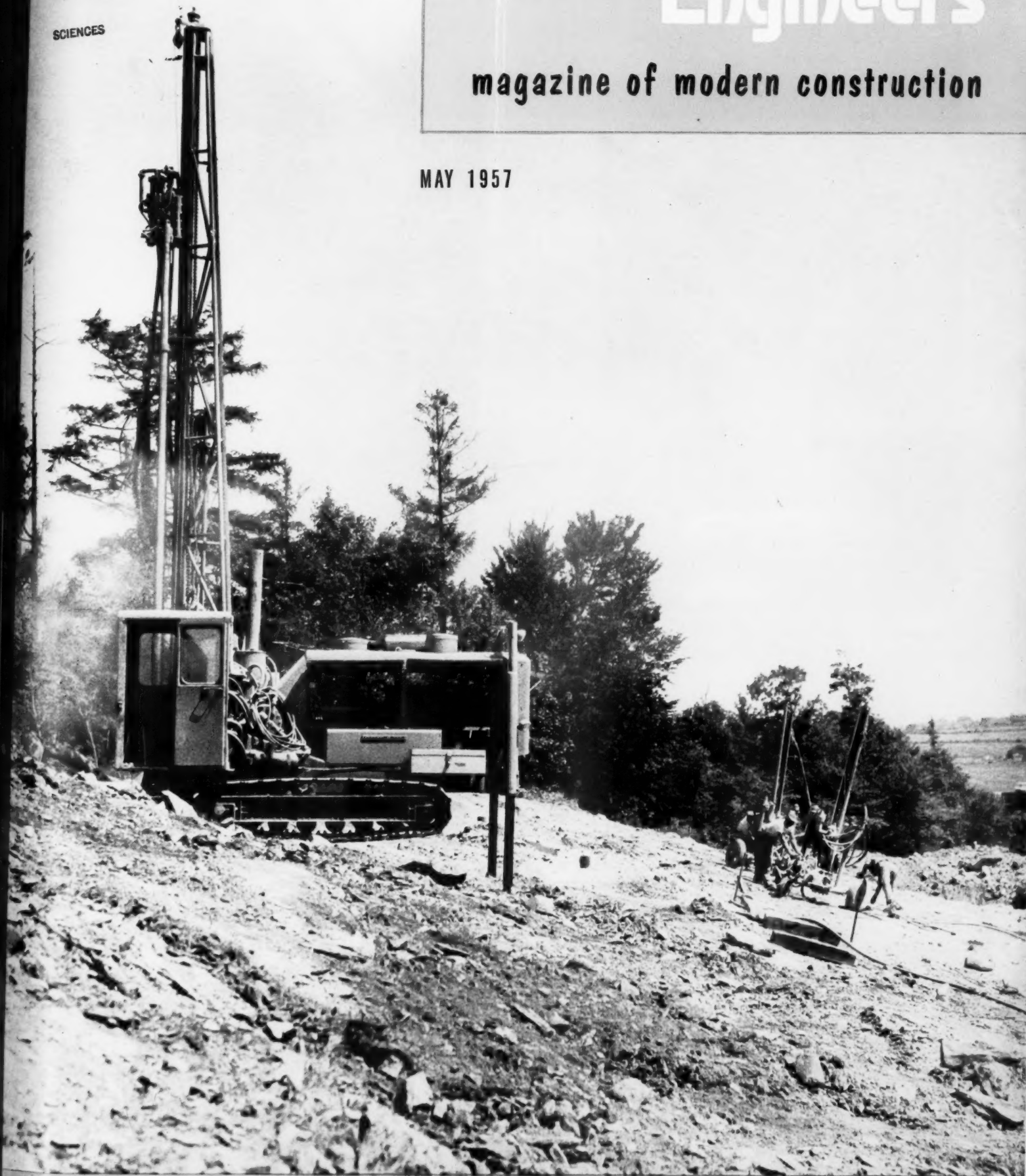
MAY 13 1957

SCIENCES

Contractors and Engineers

magazine of modern construction

MAY 1957





11,000-car parking area is paved with Asphalt

ROOSEVELT FIELD SHOPPING CENTER

Garden City, L. I., N. Y.

*Largest shopping center
in U.S.*

a
WEBB & KNAPP
project



Emulsified Texaco Asphalt and gravel are mixed by single-pass stabilizer.



Asphalt-coated gravel is spread to desired depth and compacted.



Applying seal coat of Texaco Rapid-curing Cutback Asphalt.



Roller imbeds stone chips in Cutback Asphalt seal coat.

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Frank Marmorale

The Lansdell Company
Standard Bitulithic Co.

CONSULTING ENGINEERS (Paving)
Moran, Proctor, Muessner & Rutledge



Roosevelt Field Shopping Center, with its million square feet of retail space, is the nation's largest development of its kind. An essential feature of such a center, if it is to attract and bring customers back in sufficient volume, is an adequate parking area.

Roosevelt Field has parking facilities for 11,000 automobiles. Texaco Asphalt products were used not only to construct a durable pavement at moderate cost on this area, but also in the asphalt curb, which subdivides the parking space.

Emulsified Texaco Asphalt, with gravel available on the site, were mixed thoroughly by a single-pass stabilizer, spread over the parking area by power grader, then rolled to a compacted thickness of two inches. This

was followed by a seal coat of Texaco Rapid-curing Cutback Asphalt, covered with stone chips.

The 36,000 linear feet of Texaco Asphalt curb was laid on the asphalt pavement by a special machine, then painted white for greater visibility.

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TEXACO ASPHALT

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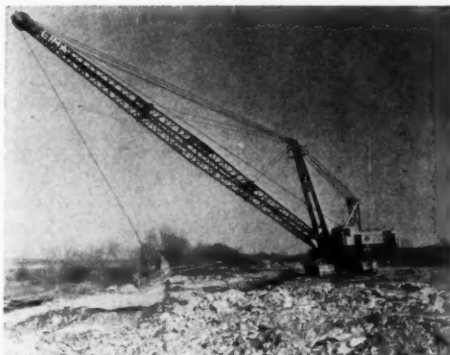
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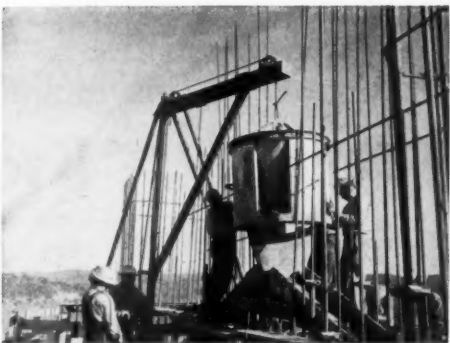
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Borrow pit work for Ferrells Bridge Dam. Pg. 26



Cal-Sag Canal widening operations. Pg. 54



Slip form pours for bridge piers. Pg. 62



Grading on Texas turnpike. Pg. 90

Governmental decisions and construction progress

Last month the U. S. Supreme Court ruled in favor of private enterprise as against public power development of hydroelectric resources at Hells Canyon on the Snake River. Thus the final legal obstruction was cleared from the path of the Idaho Power Co. in its effort to augment speedily the supply of electric power for the Northwest.

The fight has been long. Since 1950 a dispute has raged between private power, advocating the construction of three low-level dams, and public power, with its plan for a single multi-purpose high dam in the mile-deep gorge on the Oregon-Idaho border. Both sides presented convincing arguments. Congress left it to the Federal Power Commission to decide, and the FPC ruled that the three-dam project was "best adapted to a comprehensive plan for improving or developing a waterway" for the use and benefit of interstate or foreign commerce. It is unfortunate that the challenge to the authority of the FPC has delayed the construction of a worthwhile project for so long a time.

What appears to be a long delay for equally meritorious projects is shaping up at still another and lower level of government. The New York City administration is preparing to sidetrack the proposed \$260 million Narrows bridge connecting Brooklyn and Staten Island at the entrance to New York harbor, and the somewhat lesser known \$110 million Throgs Neck bridge over the East River joining Queens and the Bronx. No one questions their need. Financing is not the



obstacle, since both spans would be built by authorities as self-supporting toll projects. But next year happens to be an important state-wide and mayoralty election year, and no one holding political office wants to disturb any segment of voters by displacing families that live in the path of the bridge approaches.

Utilities in Colorado may soon be getting what appears to be an unfair assist from the state in the form of public road funds in payment for moving their pole lines when a highway is widened or reconstructed. The state legislature has voted in favor of the utility companies in this regard, but at this writing the governor has not signed the bill. Heretofore in Colorado, as in most states, utilities erect their pole lines or lay their pipes and conduits along highway right-of-ways without payment to the state, and with the understanding, written or implied, that when their facilities interfere with road work they must move their lines at their own expense. Diversion of road funds in this or a similar manner means simply that less money will be available for needed highway construction.

Of specific interest to contractors is federal legislation, now before the

House of Representatives, that may affect the relationship between general contractors and mechanical specialty subcontractors on U. S. government building work. Periodically, moves are made to require federal agencies to award separate contracts for mechanical, electrical, plumbing, piping, and other specialty trades on federal contracts. Proponents argue that these regulations would prevent such unethical practices in the handling of mechanical and specialty subbids as bid peddling by the subcontractor, and bid shopping by the general contractor. Both actions, of course, are unfair trade practices, but fortunately they are infrequent.

Separate contracts would increase the cost of construction, and all government agencies have long recognized the economy and importance of a single contract responsibility to the public interest. Administrative costs of the general contractor might be lessened, but the government contracting agency would find them increased. More cooperation between the general and the subcontractors, rather than legislation, is needed.

(Flash—Gov. McMichols of Colorado just vetoed the above-mentioned bill.)

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CONTRACTORS AND ENGINEERS



of three road projects being handled by M. A. Gammino Construction Co., Providence, R. I. The I-R wagon drills, back-ground, sink shallower holes for the cut.

Page 78

Prestressing done at job site for multi-structure school

With the trend shifting from one-building, multi-story schools to multi-unit structures spread out on sites with ample room, school construction—and the problems involved—are also changing.

Farnsworth & Chambers, Houston, Texas, ran into one of the problems common in building schools of the newer type during work on the \$2,159,000 Frank M. Black Junior High School in Houston.

Located on a wooded site in the heavily populated northwest side of Houston, the soon-to-be-completed school consists of five buildings. They required a total of 399 prestressed joists, spanning from 28 to 32 feet and spaced on 8-foot centers; 41 prestressed girders ranging up to 98 feet in length; and 69 prestressed spandrel walls.

The steel-wire tendons needed to prestress concrete for the project were supplied by Prescon Corp., Corpus Christi, enabling the general contractor to handle all precasting and prestressing operations at the project site.

All the prestressing tendons, fabricated to job specifications at Prescon's main plant in Corpus Christi, were shipped in coils to the school site. Farnsworth & Chambers used job-built forms to precast and prestress all the members.

The joist forms were set so that alternate joists were poured first. After the side forms had been removed, a parting compound was applied to the concrete and the remaining joists were poured. During the stressing process, the joists separated automatically, facilitating their removal.

The longest girders—three of them measuring 98 feet—were used on the gymnasium. The actual span was 82 feet, and there was an 8-foot cantilever on each end. The girders were modified I-sections, 4 feet 6 inches deep and 20 inches wide. Eight Prescon tendons containing ten wires each were used to apply an initial stress of 630,000 pounds.

Three modified I-shaped girders, 24 inches wide, measured 5 feet 4 inches deep and tapered to 5 feet at each end. These were used to span the 92-foot-wide auditorium building. There were no cantilevers. Ten tendons of 10 wires each transmitted a total initial stress of 785,000 pounds for each of these girders.

The cafeteria building roof rests on six girders, each of them 90 feet long and having a clear span of 70 feet. These measured 3 feet 8 inches in depth and 16 inches in width.

The shorter prestressed girders were used at the ends of the auditorium, gymnasium, and cafeteria.

A pair of crawler cranes teams to lift one of the modified I-shaped girders into place for the 92-foot-wide auditorium building. The 24-inch-wide girder measures 5 feet 4 inches deep and tapers to 5 feet at the end.



THE END

ROAD-BUILDING VETERAN PROVES
BEST EQUIPMENT. WELL MAINTAINED. PAYS OFF BEST



▲ MILLION-DOLLAR ARRAY of equipment like this takes \$7,000,000 relocation job on U. S. 21 in stride. This is just one of the many highway and airport grading and paving projects in Frank Mashuda Company's long and successful history. Tires shown are wide-base Hard Rock Lug by Goodyear.

◀ TYPICAL ON-JOB SETUP includes huge Quonset maintenance center and 2-way radio facilities. All vehicles and tires are kept in A-1 working condition at all times, on every job—and when no longer needed are returned to central maintenance center for general inspection and reconditioning. This has paid off, through the years, in one of the lowest down-time overheads in the industry.

80% of earth-mover tire down time ended by Goodyear

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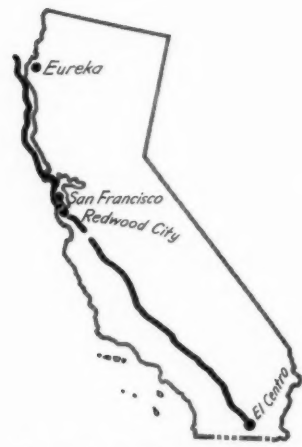
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All-Weather, Road Lug, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

For more facts, use Reader-Reply Card opposite page 18 and circle No. 202



Ripped and twisted by the quake, coast highway 1 looked like this—or worse—for the 25-mile stretch between Daly City and Half Moon Bay to the south. Some sections of the road were jarred loose and fell to the beach below, while other sections were completely blocked by sand slides.



The quake developed along the San Andreas fault. One of the longest, it starts in the Pacific Ocean north of Eureka, Calif., follows the coast to just north of the Golden Gate Bridge, and cuts across the southwestern tip of San Francisco. It runs to Redwood City, to the Hayward fault south of Hollister, then to El Centro.

Dozers work to reopen quake-ripped coast highway



These Caterpillar D8 tractors, sent by J. C. Archibald, Redwood City, to clear the highway between Daly City and Sharp Park, were some of the first pieces of equipment to start the job of clearing rock and earth slides. The sand is being dozed off the edge of the road to the beach.

These on-the-spot photos show the aftermath of California's March 22nd earthquake. Earthmoving equipment was speedily pressed into service to repair damaged Coast Highway 1 south of San Francisco.

Along a road made dangerous by cracks along one edge and slides along the other, the Cat operators work against time so that normal traffic can be restored. In some sections, asphalt paving was broken up; six fissures, between 15 and 100 feet long and up to 4 feet deep and 1 foot wide, were opened on the road.



Sand dozed to the beach by the D8's is spread along the shore by a third D8 while spectators, arriving on bicycle and foot, watch the show. Some of the cracks that were opened up along the shoreline by the quake still remain uncovered.



The residential section of the San Francisco Bay area was hit hard by the shocks. Large cracks appeared in foundation walls of houses such as this hill-top home.

Convention calendar

May 13-15 Construction Surveyors Institute

Thirty-first Annual Conference, Hotel Washington, Washington, D. C. G. Szmak, executive secretary, CSI, 101 Park Ave., New York 17, N. Y.

May 15-17 Jet Age Conference

Conference, sponsored by American Society of Civil Engineers and the Port of New York Authority, Park Sheraton Hotel, New York, N. Y. John M. Kyle, general chairman, JAC, 33 W. 39th St., New York 18, N. Y.

May 16-17 Highway Engineering Conference

Conference, Student Service Center, University of Florida, Gainesville, Fla. Emil R. Hargett, assistant professor, HEC, Department of Civil Engineering, University of Florida, Gainesville, Fla.

May 16-18 New York State Society of Professional Engineers

Convention and Engineering Industries Exposition, Statler Hotel, New York, N. Y. John Lanigan, chairman, NYSSPE, 1941 Grand Central Terminal Bldg., New York 17, N. Y.

May 20-23 American Society of Mechanical Engineers

Second Annual Design Conference in conjunction with Design Engineering Show, New York Coliseum, New York, N. Y. Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

May 27-28 American Institute of Steel Construction

National Engineering Conference, Edgewater Beach Hotel, Chicago, Ill. L. Abbett Post, executive vice president, AISC, 101 Park Ave., New York 17, N. Y.

June 3-7 American Society of Civil Engineers

Meeting, Statler Hotel, Buffalo, N. Y. D. P. Reynolds, assistant to secretary, ASCE, 33 W. 39th St., New York 18, N. Y.

June 5-8 National Society of Professional Engineers

Annual Meeting, Statler-Hilton Hotel, Dallas, Texas. Kenneth E. Trombley, NSPE, 2029 K St. N. W., Washington 6, D. C.

June 11-14 Western Association of State Highway Officials

Meeting, Shamrock-Hilton Hotel, Houston, Texas. D. C. Greer, president, WASHO, State Highway Engineer, Texas State Highway Department, Austin 14, Texas.

June 13-14 American Bridge, Tunnel, and Turnpike Association

Meeting, Mayflower Hotel, Washington, D. C. J. Allyn Stearns, executive secretary, ABTTA, P. O. Box 748, White Plains, N. Y.

June 17-21 American Society for Engineering Education

Annual Meeting, Cornell University, Ithaca, N. Y. W. Leighton Collins, secretary, ASSEE, University of Illinois, Urbana, Ill.

June 17-21 American Society for Testing Materials

Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Fred F. Van Atta, assistant secretary, ASTM, 1916 Race St., Philadelphia, Pa.

June 24-29 Concrete Reinforcing Steel Institute

Meeting, The Greenbrier, White Sulphur Springs, W. Va. H. C. Delzell, managing director, CRSI 38 S. Dearborn St., Chicago 3, Ill.

June 24-25 Wire Reinforcement Institute

Annual Spring Meeting, The Greenbrier, White Sulphur Springs, W. Va. Frank B. Brown, managing director, WRI, 1049 National Press Bldg., Washington 4, D. C.

July 8-10 American Society of Landscape Architects

Fifty-eighth Annual Meeting, Sheraton-Palace Hotel, San Francisco, Calif. Prentiss French, trustee, ASLA, 305 Grant Ave., San Francisco 8, Calif.

July 8-10 School for Highway Superintendents

Conference, Cornell University, Ithaca, N. Y. Prof. J. W. Spencer, SHS, Riley-Robb Hall, Cornell University, Ithaca, N. Y.

MAY, 1957

July 14-17 National Association of County Officials

Twenty-first Annual Conference and Exhibit, Dinkler-Plaza Hotel, Atlanta, Ga. Keith L. Seegmiller, executive secretary, NACO, 1616 Eye St. N. W., Washington 6, D. C.

July 29-August 2 Prestressed Concrete Conference

International Conference, sponsored by Prestressed Concrete Institute and University of California, Fairmont Hotel, San Francisco, Calif. Department of Conferences and Special Activities, University Extension, University of California, Berkeley 4, Calif.

Results of heedless horsepower: 40,000 deaths on U. S. roads in 1956.

Revised edition covers aspects of surveying

"Surveying", by Charles B. Breed, is a second revised edition that covers every phase of surveying. The book discusses surveys, their purposes, and sources of surveying information: measurement of distances; measuring directions with a magnetic compass; using a transit to measure angles; and the engineer's level and its uses.

Other topics cover traverses and land surveys; calculation of closed traverses and land areas; the United States system of surveying public

lands; contours; and stradia surveying with transit and plane table. The remaining chapters detail aerial surveying; lines and grades; and plotting and finishing maps.

A list of problems appears at the end of each chapter. Formulas, diagrams, and equations supplement the text of the 507-page pocket-size book.

Priced at \$5.50, the text may be purchased from the publisher, John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.



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The job pictured here is on a residential housing development near DeWitt, N. Y. The sturdy D4 Tractor has plenty of power to self-load the scraper in clay and hardpan, averaging a heaped 4.5 cu. yd. per load. For land clearing and rough grading the scraper is quickly detached and the No. 4A Bulldozer takes over.

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The Caterpillar Engine delivers 50 drawbar HP and gives the tractor 10,700 lb. maximum drawbar pull. It's economical on fuel, using No. 2 furnace oil without fouling. The optional oil clutch adds easy shifting, long life and simplified maintenance.

Designed to match the D4 for top efficiency, the No. 40 Scraper loads fast, has quick, positive ejection and is ruggedly built to stay on the job. Your Caterpillar Dealer can show you how these units can make money for you. Ask him for a demonstration on your own job. He backs the long productive life of the machines he sells with reliable service and Caterpillar parts.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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**WANTED—
THE HARD WORK**

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Tallamy keynotes SAE conference

Industry engineers present papers on improving design, construction of earthmoving equipment to meet needs of federal highway program

The worst blizzard of the year might have delayed, but did not prevent, over 1,500 delegates arriving at Peoria, Ill., for the eighth annual Earthmoving Industry Conference, held March 26th and 27th at the Pere Marquette Hotel. Sponsored by the Central Illinois Section of the Society of Automotive Engineers, the conference has become the second largest of the Society.

Bertram D. Tallamy, Federal Highway Administrator, in his keynote address to the conference, gave some interesting figures to demonstrate the vast size of the new Federal Highway



Delegates for the eighth annual Earthmoving Industry Conference register at the Pere Marquette Hotel in Peoria, Ill. The conference, sponsored by the Central Illinois Section of the Society of Automotive Engineers, has become the second largest of the Society.

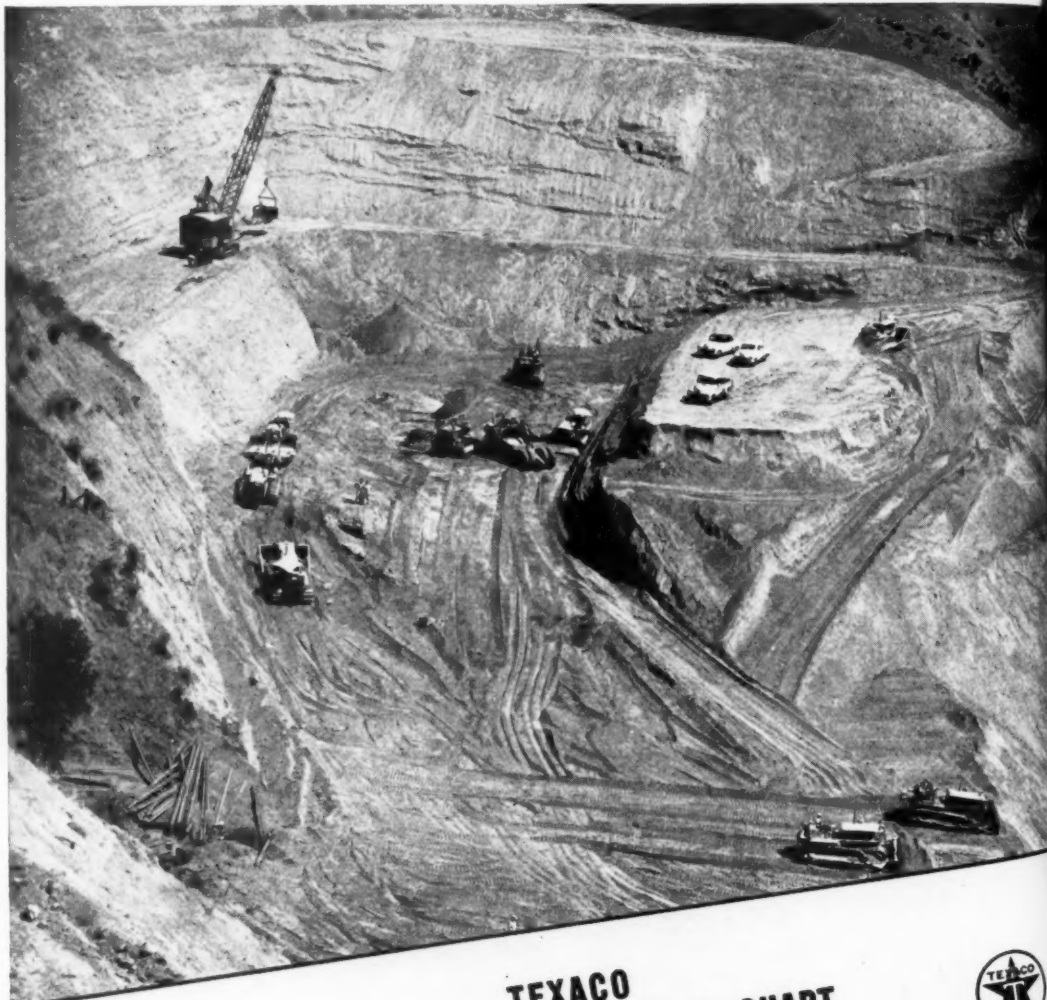
Program. Comparing the magnitude of the program with the construction of the Panama Canal, Tallamy stated that the Federal Highway Program was 60 times greater. The 13-year program will link 90 per cent of the principal cities of the country as well as provide a free flow of traffic in and out of these metropolitan areas.

Tallamy went on to say that although the interstate system accounts for only 1.2 per cent of the total mileage of roads in the country, the system handles 20 per cent of all the traffic. In the next 13 years the government will spend \$24.8 billion on the Federal Highway program to be matched by \$2.6 billion contributed by the states. Because of the great expense involved in acquiring rights-of-way and building expressways, about 50 per cent of the total fund will be spent in urban areas.

Tallamy gave an encouraging re-



Toastmaster R. D. Henderson, chairman of the Central Illinois Section of the SAE, makes a brief speech at the banquet held in the ballroom of the Pere Marquette Hotel.



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CONTRACTORS AND ENGINEERS

port on the progress of construction under the highway program. After being in operation only nine months, a total of 340 projects, involving 852 miles of expressways and 815 bridges, are under construction.

Technical sessions

In the technical sessions a variety of subjects were discussed by the engineers of the industry and the U. S. Army. Col. J. J. Wilson, armor chief of the General Test Section of the U. S. Army Armor Board, pointed out the Army's need for a new type of transport vehicle, similar in design to large-diameter rubber-tire earthmoving equipment. This type of vehicle would provide the Army with vastly improved off-road mobility for transporting troops and supplies.

B. W. Kelley and R. Pedersen of the research department of Caterpillar Tractor Co. reported on tests determining the beam strength of gears by the photoelastic method. The performance of on-the-job earthmoving machines was treated in a paper presented by W. D. Speight and W. H. Jones, also of Caterpillar's research department. The authors traced the development of the instrument truck which rides beside the equipment being tested and receives electrical signals through wires connected to the equipment. Also discussed were the various methods for measuring and recording temperature, load, displacement, and velocity.

The principles and applications of various types of torque converters were explained by J. B. Black and

W. H. McGlade, left, conference chairman, welcomes Bertram D. Tallamy, federal highway administrator and chief speaker at the conclave.



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MAY, 1957

M. W. Dundore of the hydraulic division of the Twin Disc Clutch Co.

M. G. Bekker, technical director of the Land Locomotion Research Laboratory of the Detroit Arsenal, presented a paper on terrain evaluation in automotive off-the-road operations. He introduced a mathematical formula which allows a person, knowing the characteristics of a given soil, to calculate the sinkage of a piece of equipment carrying a load over that soil.

Kenneth Kolinger of the construction equipment engineering department of International Harvester Co. discussed the development of the new International Payhaulers. His talk included a description of the field tests, design problems, and final design of these units. In the same session M. L. Conrad, director of engineering, Clark Equipment Co., spoke of the many advantages of the power shift combined with the torque converter in self-loading vehicles.

W. C. Weltman of the engineer-development division of the Aluminum Co. of America, in his speech, pointed out that a 10 to 15 per cent increase in payload capacity, without increasing gross vehicle weight, could be realized through the use of aluminum alloys in truck bodies. The weight saving over steel is as much as 2,500 pounds for truck-mounted dump bodies to 3,200 pounds for dump trailers.

W. H. McGlade, assistant to the executive vice-president of LeTourneau-Westinghouse Co., and general chairman of the SAE affair is to be congratulated on a smooth-running conference; the Spring blizzard, that struck on the eve of the meeting, was not on the schedule. **THE END**

Road program stretched to raise needed money

Bertram D. Tallamy, Federal Highway Administrator, told Congress that the road program might have to be stretched out to 15 years instead of the originally scheduled 13, in order to keep the highways on a pay-as-you-go basis. If the program takes 15 years, both the states and the federal government will be able to raise all the money needed for the network.

Under the law, federal authorizations for the \$27 billion system were to start at \$1 billion in the 1957 fiscal year that ends June 30.

New York City garage to have unique parking system

A revolutionary method of handling cars by elevators that can run vertically, horizontally and diagonally is being installed in a \$1 million garage on West 45th Street, New York City. Under the Bowser Parking System, cars are hoisted to electrically-selected stalls at 400 feet per minute, and parked in about 60 seconds.

Before construction started on West 45th Street, the 30-man syndicate that owns the 85x100-foot site had to wait two years for a re-zoning permit in order to erect the garage in the area. The 8-story garage, in accordance with city regulations, will have an open facade on the 45th Street and Eighth Avenue sides. Made entirely of reinforced concrete, it will be the first open building in New York City protected by safety cables.

The syndicate traveled throughout the country to find a garage system which afforded the maximum use of the property and 100 per cent mechanical reliability. The Bowser system was selected because it requires half the ground area of a ramp-type garage with the same parking facilities.

Over-all design

Two elevators will operate in a well that extends through the length and width of the building. The elevator shaft or hatchway, of vertical steel design, will be suspended at the top from an overhead traveling crane. The speed of the crane will provide simultaneous lateral movement of the elevator cab.

The principle feature of the hoisting structure is the crane. A standard 25-ton factory crane bridge, straddling the elevator well, it will ride on standard 80-pound steel rails flanking the roof. Bearings for the rails will be provided by reinforced-concrete girders supported by building columns integral with the elevator well walls. All cranes operating in the building are so designed that they cannot run into each other.

Suspended from the crane bridge is the vertical elevator shaft. Constructed of lightweight structural steel standard shapes, the vertical member on one side is a truss system, along which the main counterweight rides. The other vertical is a built-up plate member, which extends from the crane bridge to a point below the entrance level of the building.

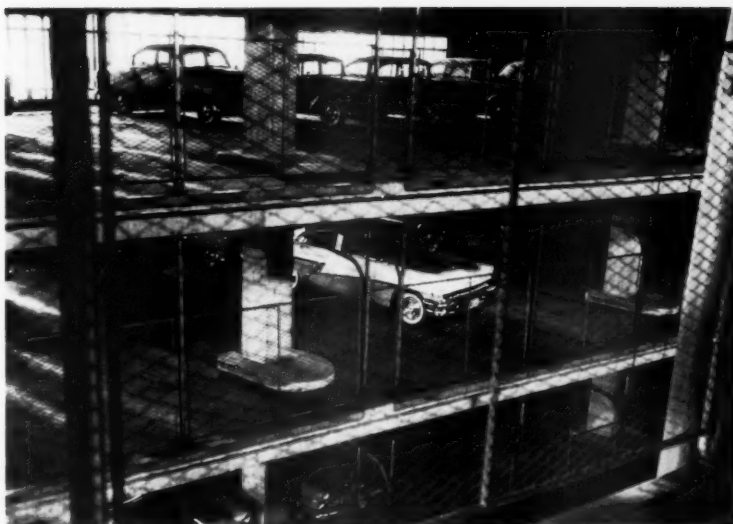
At the bottom of the hatchway are horizontal outriggers of lightweight truss design. At each end of the out-

Elevators moving vertically, horizontally, diagonally deliver car in 60 seconds; automatic signal-control system governs car from the time it enters building



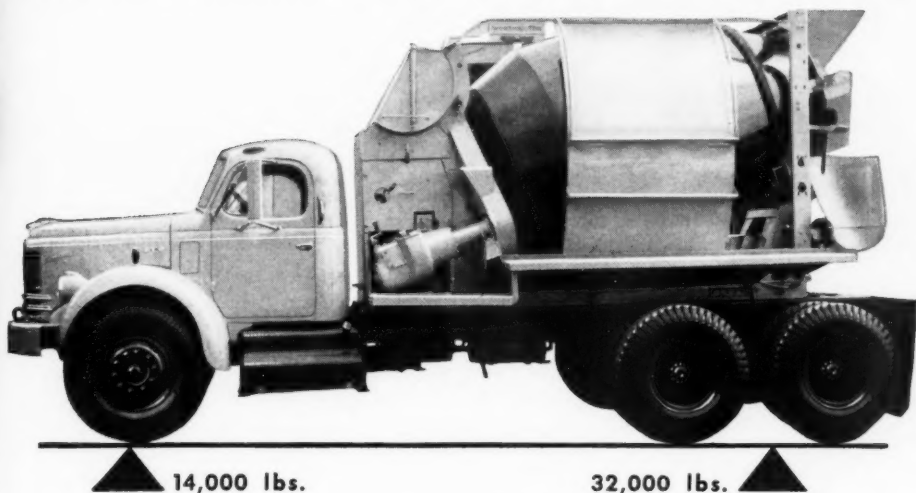
Reo tandems chute concrete directly into tremies while pouring a 2710 cu. yd. seal for bridge pier in Portland, Ore. A Seattle construction and engineering co. completed the pour in 20 hours, averaging 135 cu. yds. an hour.

When the \$1 million garage on West 45th Street is completed, cars will be parked on either side of the hatchway for maximum safety and ease of handling. An elevator, carrying the car, travels in the hatchway and stops at the designated stall. When it arrives there, the barricades rise, and the operator parks the car.



MORE MIX

6 1/2 yds. within 32,000 lb. tandem limit



If you want to haul more mix at lower cost—LOOK AT REO! The new Reo F-506M is designed and built specifically for mixer use. The F-506M hauls bigger payloads because it has new high-strength, low weight double-side-rail frame construction and "payload-engineered" weight distribution. And because Reo is tough—real tough all the way through.

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short-stroke, wet-sleeve Gold Comet engine. Plenty of power for both truck and mixer. And you get Reo's famous 100,000 mile or one year engine warranty.

For states that permit greater axle loadings than 32,000 lbs., Reo builds the F-536M—52,000 lbs. G.V.W. Thirty-three other models, including eight off-highway units, means a Reo truck ideally suited for any construction job.

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rigger are ball-bearing rollers, riding in steel angles attached full-length along the edge of the parking level floor. These angles are in constant contact with the rollers, eliminating the transverse sway of the hatchway structure.

The double-access elevator cabs are equipped front and rear with steel counterweighted barricades. The barricades have contact breakers that prevent the hoist from moving until the barricades are firmly seated. Each cab drifts upward when empty and descends under manual control when loaded.

Control system

A synchronized, completely automatic signal-control system governs car movement from the time it is checked in at the receiving bay until it is released at the cashier's office.

When a driver brings his car into the garage, he drives to any empty receiving bay. The checker for that section decides which stall the car will occupy, gives one stub to the owner and one to the elevator operator, and sends the other to the cashier's office. The operator drives the car into the elevator cab, presses the button corresponding to the stub number, and the elevator moves laterally and vertically to the designated stall.

When the cab is at the stall, the barricades rise, and the operator drives the car forward or backward into its parked position. The elevator stub is placed in its corresponding panel pocket in the cab, showing that the stall is occupied.

The cashier, who received the third stub, inserts it in the corresponding panel pocket in her office. The contact in that pocket causes a light to show on the checker's panel, indicating to him that the stall is occupied.

When the owner calls for his car, the cashier pulls the stub from the pocket. Retraction of the stub serves to light the related indicator on the elevator panel, signaling for the car in that stall and cancelling the occupied light in the checker's panel. While the owner is paying his bill, the elevator operator starts for the proper stall. The car is at the ground floor in a minute, ready for the owner to drive it away.

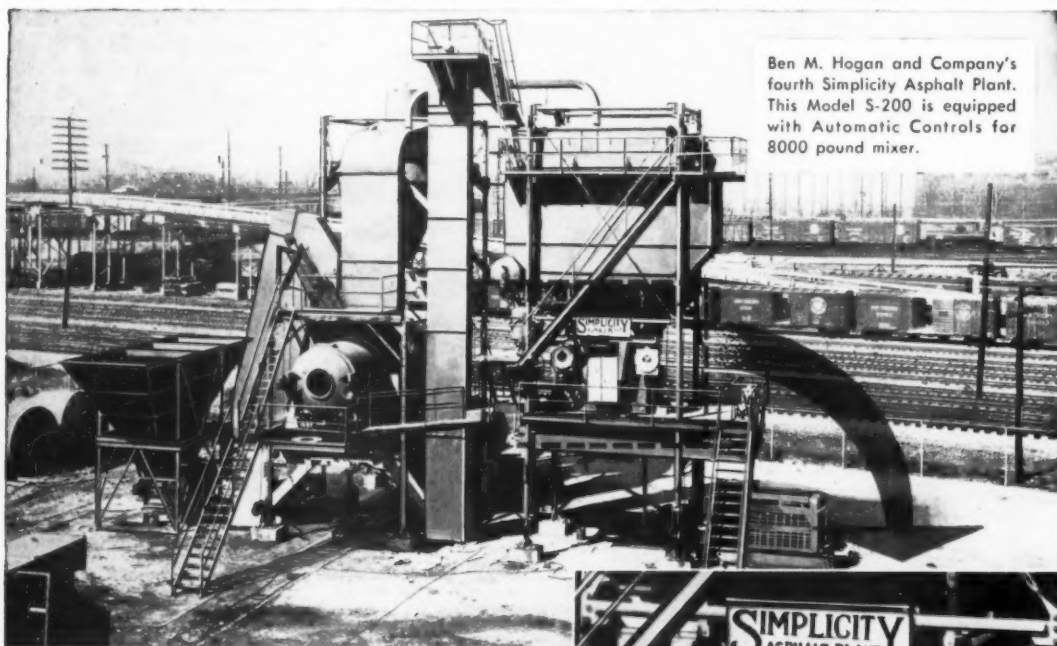
THE END

For more facts, use Reader-Reply Card opposite page 18 and circle No. 205

Pattern of yesterday is carried on in designs for the construction machines of tomorrow

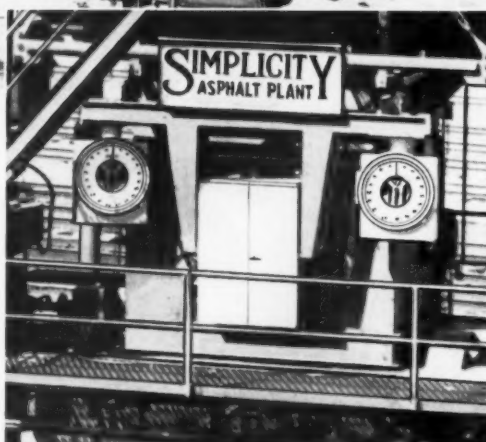
by JOHN JASS, chief engineer
Caterpillar Tractor Co., Peoria, Ill.

*Engineers strive for more horsepower, ease of control,
and simpler maintenance for rigs still on the drawing boards*



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Behind the development of new machines and improvements to old ones are two objectives: to enable the owner to operate them at a lower cost and to increase production. In more specific terms, it is the job of the engineering department to assess the requirements of a machine and the performance specified by a customer, then to make machines that meet those requirements.

In Caterpillar's research and engineering organization, we are constantly working to keep to this line of thinking. Since the introduction of its machines, like the D9 tractor, the No. 583 Pipelayer, and the No. 933, No. 955, and No. 977 Traxcavators, each embodying features new in their respective fields, Caterpillar engineering has been engaged in improving these machines and increasing their versatility. At the same time, constant improvement has been made in the older machines in the line.

Tractor-shovel developments

The No. 977 Traxcavator in the standard version, for example, is suited to a great many applications. But occasionally, an extreme condition is encountered where an unusually sturdy machine is required, such as in some rock quarry. For this work, we have recently developed a heavy-duty undercarriage to provide increased strength and rigidity. The undercarriage is similar to that used on the D7 tractor. The heavy-duty bucket introduced about the same time as the Traxcavator is usually used with this heavy-duty undercarriage.

An innovation commanding attention from a group of our engineers during the past year or more has been the side-dump bucket on a Traxcavator. This is an important development for tractor-shovel users operating in restricted spaces and alongside highways, where the ordinary machine must back and turn in order to unload. This side-dump action is in addition to the regular forward and back bucket action.

Another attachment for the Traxcavator is the mounted ripper, which will bring the Traxcavator into many tough jobs where other types of machinery have previously held sway.

But additions to the number of things that can be put on a Traxca-

CONTRACTORS AND ENGINEERS

vator would be of dubious value if they were not easy for the operator to handle. Ease of control was kept in mind during the design of the side-dump bucket and Traxcavator ripper. The operator can steer and shift with his left hand and manipulate the controls for the attachments with his right.

A tractor-mounted ripper has also made its appearance on the D8 and D9 tractors and, since its inception, has replaced drilling and blasting in many areas. In many cases, the money saved by ripping has more than equalled the total cost of the

tractor and ripper in a short time.

Some new developments have taken place up front on the tractors. The U-dozer, now available for the D9 tractor, affords extra capacity in working with lighter materials to give the owner more production.

One of the latest developments in bulldozers is the Gyro-Dozer, which has cylinders on both sides so that the operator can raise and lower the ends and/or tip the blade face forward and back. Teeth installed on the cutting edge assist the prying action as the blade is tipped. This is a blade specially designed for work in

tough cohesive materials.

More horsepower

The tractor itself has not been neglected; the D9 has had a horsepower increase from 286 to 320 fly-wheel horsepower. Increasing the horsepower of a tractor engine involves more than just opening the fuel rack. The turbocharger had to be readjusted to operate at a higher speed and force more air into the cylinders for more power. But even before this could be done, we had to look at the internal parts of the engine and at the tractor transmission

to find if the stresses and strains set up by the increased horsepower could be absorbed by the component parts without decreasing their life. Where life would be shortened, we designed tougher, heavier parts.

The oil-type steering clutch recently introduced into the D8 tractor is a major development designed to function under greater load and power, since the capacity of the simply dry-type of clutch would no longer serve the purpose. The principle of the oil-type steering clutch is the same as that of the flywheel oil-type clutch. A thin film of oil circu-

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lates between the clutch plates, separating them. The cohesive qualities of the oil retard the revolutions of the clutch plates and offer lubrication and cooling to the contact surfaces as they are compressed together. Brake life is also greatly increased. The steering clutch operates in a pool of oil. This oil cools the drum and spreads a thin film over the drum where the brake shoes contact.

Much that is presently taking place in Caterpillar engineering is concerned with the machines of the fu-

ture. We are continuing our research in the field of cab, seat, and control design to make operator effort an ever decreasing thing. By reducing operator effort, we can increase the speed at which he can doze or push—in other words, increase production.

Another thing we strive to reduce to a practical minimum is the amount of time required for usual maintenance. We can accomplish this by finding ways to reduce the number of lubricating points but still guarantee proper lubrication for all parts. Or

we can find ways to fill a fuel tank faster. Things such as these will increase the time a machine is available for productive work. The machines of the future will also have increases in power and a broader use of turbochargers.

Turbochargers

This is already true to a certain extent. One engine with a turbocharger that has been receiving favorable comment is the D353, the engine used in the D9 tractor. This engine has

gone from 286 to 320 flywheel horsepower, and we will shortly introduce an industrial version of the 353. This will give the Caterpillar line an engine of high horsepower output but lighter in weight than the V engines. This 6¼-inch engine is not intended to replace any V engines, but it is designed for applications where mobility is important.

Now that turbochargers have been added to the V engines, there are two V engines with maximum horsepower outputs of 430 for the D375 and 650 for the D397. Spark-ignited engines introduced to the V-engine line provide another convenience for customers. Many of them are close to steady sources of natural gas. In these localities, natural gas being cheaper than diesel fuel, owners are able to use it to achieve much lower operating costs. In the V-engines, we have two basic engines, the D375 (Series D) and the D397 (Series D) that the customer can order as naturally aspirated, roots blown, turbocharged or spark-ignited.

One of the more important developments at Caterpillar is the Series G engine, the D315 and D318. These differ from standard models in that they are lighter in weight, smaller in size, and lower in cost. The horsepower output remains the same. Though there are many changes, they are external; the internal parts have remained the same.

One reason for this development is that our engines are used to power the products of many manufacturers. These smaller engines will permit easier installation in their excavators, rollers, or compressors, or other equipment. Another reason is that users sometimes change locations frequently and the shorter and lighter engine is capable of being transported easier.

In line with decreasing the amount of time required for usual maintenance, the latest Cat diesel engine and gasoline starting engine—where there is one—have a common lube system. There is one less sump to drain.

The trend should be obvious. We are after smaller, lighter, and less expensive engines that do not sacrifice serviceability. We also want to get more power out of the engines. We hope to get this result by improving existing designs.

Changes in graders

Branches of the engineering department at other Cat plants are also working on tomorrow's equipment. At Decatur, Ill., Caterpillar engineers are making changes and improvements in motor graders. A little over a year ago, the oil clutch was announced for the No. 12 motor grader. This has had the same effect on clutch life that it has had in the track-type tractors. Not too long ago, the power side shift blade was made available. This enables the operator to reach out with the blade or to retract the blade to get around an obstacle like a mailbox, tree stump, or large rock.

Still another important development is the electronic automatic blade leveler brought out last summer

Heaped loads up to 25 cu. yds. were easily handled in fast time by this DW21-No. 470 Lowbowl Scraper for L. G. Arnold, Inc. Other Caterpillar-built units in the company's line-up include a D9 used as pusher; one non-current DW21; two D8s; two No. 12s; one D6 with tamper; one D7 with Bulldozer and a No. 80 Scraper.



"OUTPRODUCED BY FAR ANY OTHER MACHINES ON THIS JOB"

Phil Dudenhoefer, grade foreman, L. G. Arnold, Inc., Eau Claire, Wisconsin

CAT* Lowbowl Scraper, push loaded by a D9, set the following pace on relocation of U. S. 53, Wisconsin:

- 1. Averaged 12 to 15 minutes a trip with heaped loads on a three-mile round-trip haul.**
- 2. Loaded sandy gravel in 70 seconds and topsoil in 45 seconds.**

Here's more proof that Caterpillar Lowbowl Scraper design really pays off on the job. The proof comes from F. L. Carr, Vice-President, and Phil Dudenhoefer, grade foreman, of L. G. Arnold, Inc.

Quoting F. L. Carr: "The new DW21 and D9 pusher have more than lived up to all of our expectations. The low-bowl design of the new scraper has even improved the easy loading feature of Caterpillar-built hauling equipment."

Quoting Phil Dudenhoefer: "In my 28 years in this business, I've seen all sorts of earthmoving machines, and Caterpillar beats them all. As grade foreman, I've got both feet right down in the dirt where I observe and record the output and performance of every machine. I'll say this: the DW21 and No. 470 Lowbowl Scraper with the D9 pushing outproduced by far any other machines on this job!"

The job: The relocation of about 10 miles of U. S. 53 between Eau Claire and Chippewa Falls, which involved the handling of 78,059 cu. yd. of borrow (sandy gravel), 42,901 cu. yd. of unclassified and 93,272 cu. yd. of overburden (topsoil). The Caterpillar DW21-No. 470

Lowbowl Scraper (struck capacity 18 cu. yd.), carrying heaped loads up to 25 cu. yd., made four trips an hour on a three-mile round-trip haul. Loading time, with the D9 pushing, averaged 70 seconds for sandy gravel and 45 seconds for topsoil.

On job after job, under varying conditions, the Cat Lowbowl Scraper is showing its heels to other earthmovers. Your Caterpillar Dealer, who backs you with prompt service, will be glad to show you facts and figures comparing its performance with other units.

For proof that it will pay you to put DW21-No. 470 Lowbowl Scrapers on your job, see him today!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

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by Preco, Inc., Los Angeles, on requirements established by Caterpillar Engineering. This device permits the operator to set the electronic control to a certain grade; the blade leveler takes care of the rest. The mechanism makes continual adjustments—often minute—in the blade angle and depth to give a smooth, uniform cut. This device can be flicked on or off at will. Future developments in motor graders are being made with an eye toward increased operator efficiency and maximum machine availability.

Work on wheel tractors

At Decatur, other engineers are working out new developments in the wheel tractor field. One result of their work has been the No. 668 tractor. This new four-wheel-drive wheel tractor is one of the most versatile machines in the Caterpillar line. It can be used as a bulldozer or pusher tractor. It can be used with an integral logging arch. It can pull either a two-wheel or four-wheel scraper, or a wagon. Its high speeds allow it to move rapidly from one job to the next, and its four-wheel drive gives it enough traction for some of the roughest terrain. For many months, the machine has been tested on all types of jobs in as many severe conditions as could be found. Many of its principles are the same or similar to those on some four-wheel drive DW20's that we prepared for the military and that met with great acceptance and success.

Future developments in the wheel tractor end of our business will soon be coming thick and fast. We are aiming for higher power-to-weight ratios—in other words, more horsepower—and reductions in operator manual effort and fatigue. As in the truck-type tractors, engines, and motor graders, the number of maintenance points will be reduced to increase machine availability.

Wheel tractors cannot be mentioned without saying something about the scrapers that go behind them. These are worked on by our Joliet, Ill., engineering department.

Scraper design

The Lowbowl design—lower and wider bowls for easier loading—has been out for some time now. Cat has the Lowbowl No. 456 scraper for the DW20, the No. 470 for the DW21, and the No. 463 for the D8. This design has proved itself in the field on many jobs, and the design promises to influence our thinking for some time to come.

One development—actually a change—of some import from Joliet is the bolted construction of the scraper draft arms, where it is required, in order to reduce shipping width. This is a corollary of the wider Lowbowl design that permits the arms to be detached to make the scraper easier to transport.

We are trying to retain ease of loading, the demonstrated advantage of the Lowbowl design, while getting greater production. This is one goal that will continue to influence our scraper designs in the future. Wide-base tires are also having an effect on

design. The 29½×29 tires have been received well and will be part of the thinking of the engineering department for some time to come.

Continuous changes

In reviewing what has taken place and what is taking place in the design of the track-type tractor, engine, wheel tractor, motor grader, and scraper sections of Caterpillar's engineering department, I have dealt with only the more obvious changes and innovations.

But any consideration of our engineering department's work and accomplishments would be incomplete without mention of one of the most necessary and important phases of work in the department. About 50 per cent of the work of our engineers is

concerned with changes that do not receive much attention. Development is constantly taking place in the various component parts of our machines. A capscrew, a plate, a bearing, or a seal may be redesigned to make the machine better. Or a new material may be used to make a part stronger, lighter, or less expensive. But though this work rarely gets attention, it has made—and is continuing to make—invaluable contributions to the overall performance of many machines.

THE END

Text discusses methods influencing architecture

The inside picture of building enterprises is detailed in "Building, U. S. A." by the editors of *Architectural*

Forum. The book contains information on the men and methods that influence architecture in America today; the real estate operator; and the lender.

Other topics detail the jobs of the contractor—a broker of materials and manpower—and his labor force; the effects modern architecture have on the manufacturer; the requirements of the corporate client; and the engineer, who has changed the industry's forms. Lastly, the problems and duties of the architect are discussed. Job photos and pictures of completed buildings are contained in the book.

The book, priced at \$3.95, may be purchased from the publisher, McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36, N. Y.



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EIMCO 105's COST LESS . . . INCREASE PROFITS

MR. CONTRACTOR: For future highway bidding, plan now to include an Eimco 105 Excavator or Front End Loader (or both) in your equipment layout. Then, you'll know you have earthmovers to rely upon for dependable, high tonnage performance on the TOUGH jobs.

Your assurance of this is Eimco's knowledge and experience gained in almost three-quarters century, building thousands of heavy machines for the Mining Industry, where easy loading tasks rarely exist . . . and where — in spite of the severest of job conditions — large payloads, fast cycles and minimum downtime must be maintained if profit is to be made.

Both 105 Loaders have this same "extra" margin of built-in strength for the tough jobs. Both mount on the basic 105 crawler-tractor that gets extra performance from every attachment through high-speed

mobility. Each employs an entirely different operating principle for tasks where physical conditions make one or the other more practical.

The 105 Excavator is ideal for highway tunnel work . . . or narrow cuts where overhead discharge eliminates awkward "dump position" maneuvers . . . speeds cycle time and minimizes interference with bypassing motorists.

The 105 Heavy Duty Front-End Loader is ideal where discharging into light units . . . handling fine, dusty or extremely wet material . . . or cutting smooth grades call for close control. Breakout force on this machine is 40,000 pounds.

On any given TOUGH job that really tests the ability of equipment to produce, Eimcos will move more yards every day than any other equally-rated machine.

Get all the facts on 105 Eimcos before you buy!

THE EIMCO CORPORATION
Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Pittsburgh, Pa. Seattle, Wash.
Cleveland, Ohio Houston, Tex. London, England Gateshead, England Milan, Italy Johannesburg, South Africa



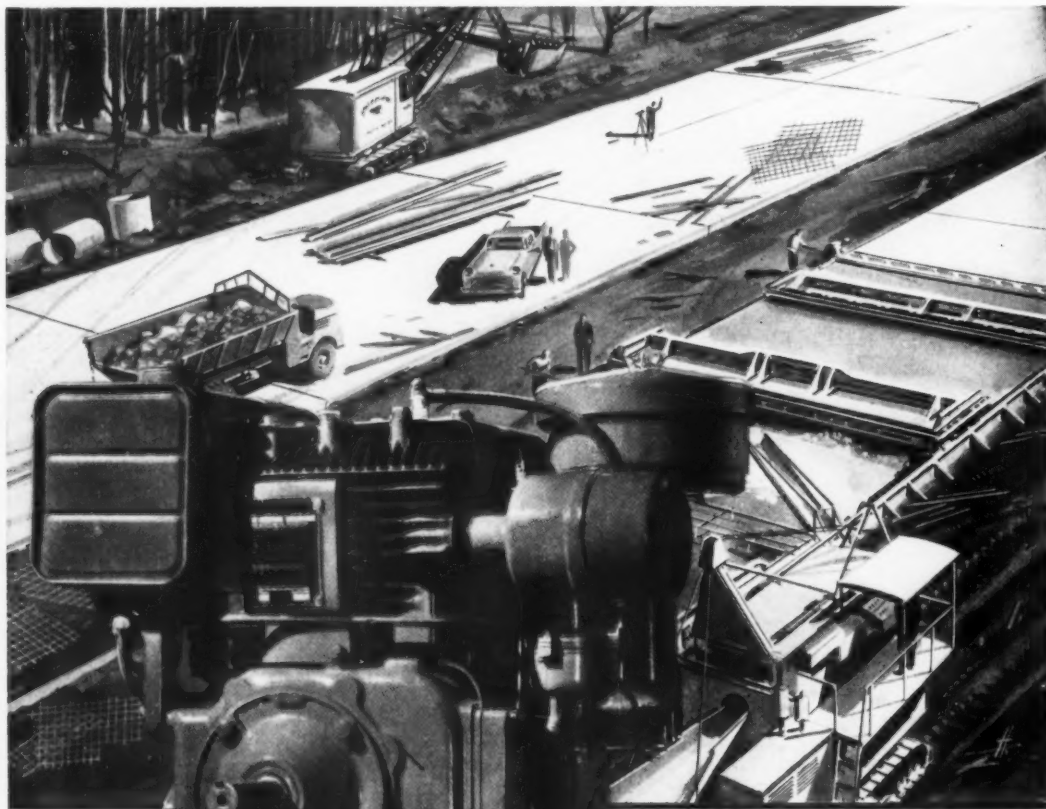
B-254

For more facts, use Reader-Reply Card opposite page 18 and circle No. 209

Tailor-made airplane hangars feature fast erection, low cost



A B-52 is in final position for maintenance. The projections on either side of the hangar house the 28½-foot-high sliding doors.



Announcing versatile, new Model 19

A rugged, smooth-running, single-cylinder, 4-CYCLE gasoline engine (7.0 hp) with exclusive Magnematic Ignition for instant starting — *always*. Built to provide superior performance for a wide range of construction and other equipment.

Power partners that make great products even better!

FOR equipment ranging from pumps, compressors, finishers, vibrators and tampers . . . to concrete saws, generators, elevating equipment, tar kettles, power lubricators, etc., etc. — insist on Briggs & Stratton 4-CYCLE engines. These *power partners* are built to take hard usage in winter or summer — sub-zero or broiling sun, snow or rain . . . they have the guts to take punishment and make tough jobs easy.



Authorized Briggs & Stratton service is nearby — Look in the Yellow Pages of the phone book under "ENGINES — GASOLINE"



For more facts, use Reader-Reply Card opposite page 18 and circle No. 210

Tailor-made maintenance hangars, equipped with movable platforms that fit specific planes, have been unveiled by the air force at Carswell Base, Fort Worth, Texas. The structural steel hangars now give ground crews maximum protection from the weather and maximum access to all parts of the airplanes.

Designed and erected by Luria Engineering Co., Bethlehem, Pa., the pre-engineered maintenance docks have a structural steel frame with a 198-foot clear-span door opening. The 28½-foot-high door has a 32-foot clearance for the tail of the plane. Each 85-foot-deep building has a 30-foot-deep projecting nose section. Roof and sidewalls are of galvanized steel sheets, insulated with rigid Fiberglas panels. The unique design enables the structure to be erected in less than two months at a \$200,000 cost.

Interior of hangars

The hangars, designed for members of an "aircraft family", will serve as multi-usage docks for aircraft of various shapes, including the B-52, B-58, C-124, C-133, and KC-135. Each dock has an electrically operated bridge crane for use in removing engines; concentrated illumination in all work areas, and complete over-all lighting; and a built-in carbon dioxide fire extinguishing system. Other facilities in the docks include a compressed-air-distribution system, adjustable fuselage closures, two-engine removal doors, and insulation.

Post-flight maintenance takes approximately 8 hours for a multi-engine aircraft; periodic inspection and maintenance, after a certain number of flying hours, takes about a week. Until now, there have been two ways of handling the maintenance problem. One way is to use an expensive hangar building fitted with auxiliary services, equipment, and tools, and designed to accommodate a number of types of planes. The other way is to use temporary maintenance setups, which either do not provide easy access to all parts of the plane at one time, or provide little or no weather protection.

The docks were developed in cooperation with the U. S. Air Force Headquarters, Strategic Air Command, Military Air Transportation Service, and Wright Air Development Center, in conjunction with the air force specialized maintenance program.

THE END

CONTRACTORS AND ENGINEERS



An air tool on free loan if your Blue Brute needs repair!

BLUE BRUTE DISTRIBUTORS ANNOUNCE NEW GUARANTEED AVAILABILITY PLAN

The most important thing about an air tool is to keep it out on the job working.

That's why Worthington Blue Brute tools are built for ruggedness—for ability to stand up under day-in, day-out punishment.

Another progressive step in keeping Blue Brute air tools on the job has just been announced. Under the terms of a new Availability Plan, we will lend you an air tool free if any of your hand-held Blue Brute tools is in our shop for repair.

Greater tool stocks, parts inventories

To be sure the tool you need is there when you need it, we have recently enlarged our stock of standard air tools and accessories. We also carry a large inventory of parts so that repairs or replacements can be made quickly and inexpensively.

For greater profits keep your air tools on the job by (1) buying Blue Brute tools and (2) taking advantage of the Guaranteed Availability Plan. For complete details on the new plan, ask your nearby Blue Brute distributor for Bulletin G-2500.

H.7.6

WORTHINGTON



For more facts, use Reader-Reply Card opposite page 15 and circle No. 211

For details about the new Availability Plan
see a participating Blue Brute distributor

ALABAMA
Ben Williams Equipment Company—Andalusia
H. S. Salmon & Company—Birmingham

CALIFORNIA
West Coast Engine & Equipment Co.—Berkeley
LeRoy-Rix Machinery Company—Los Angeles
L. E. McDowell Co.—Richmond
H. P. Kingsley Company—San Bernardino
Vern & Flynn's Rental Service—San Carlos
Kenton Equipment Company—San Diego

COLORADO
Power Equipment Company—Denver

CONNECTICUT
Construction Equipment Company—Wilson

FLORIDA
Julien P. Benjamin Equipment Co.—Jacksonville
A. W. Thomas Construction Machinery—N. Miami
Highway Equipment & Supply Co.—Orlando

GEORGIA
Tractor & Machinery Company—Atlanta

ILLINOIS
Riverside Sales Contractors Equip.—Brookfield
Capital Tractor & Equip. Co.—Morton, Springfield

INDIANA
Reid-Holcomb Co.—Indianapolis, Evansville,
South Bend

KANSAS
Southwest Equipment Company—Dodge City

MAINE
N. A. Burkitt, Inc.—South Portland

MARYLAND
Elphinstone, Inc.—Baltimore
Free State Equipment Co.—Baltimore
Washington, D. C.

MASSACHUSETTS
Morrisey Brothers Tractor Company—Burlington,
Northampton, Woburn

MICHIGAN
Great Lakes Equipment Company—Muskegon

MINNESOTA
Minneapolis Equipment Company—Minneapolis

MONTANA
Caird Engineering Works—Helena

NEW HAMPSHIRE
New Hampshire Explosives & Machinery Co.—
Concord

NEW JERSEY
Miller Equipment Company—Duncellen
American Air Compressor Corp.—North Bergen

NEW YORK
Murray Construction Equipment Co.—Buffalo
Heil Equipment Company—Long Island City

NORTH CAROLINA
Spartan Equipment Company—Charlotte

OHIO
Brinker Supply Co.—Cleveland, Columbus, Dover
Beasley-Holmes Company—Toledo

OKLAHOMA
Herd Equipment Company—Oklahoma City

OREGON
Western Equipment Company—Eugene, Portland

PENNSYLVANIA
American Equipment Co.—Mechanicsburg
Metalweld, Inc.—Philadelphia

RHODE ISLAND
BMG Equipment Company—Providence

SOUTH CAROLINA
Gaines W. Harrison & Sons—Columbia

SOUTH DAKOTA
Sioux Road, Inc.—Rapid City, Sioux Falls

TENNESSEE
Carey Equipment Company—Memphis

TEXAS
Abilene Equipment Company—Abilene
Tom W. Carpenter Equipment Co.—Amarillo
G. A. Coffey Company, Inc.—Dallas
Pearce Equip., Co., Inc.—Houston, San Antonio

VIRGINIA
Cary Hall Machinery Company—Salem
Industrial Service Company, Inc.—Norfolk
Knight Equipment, Inc.—Richmond, Arlington

WASHINGTON
Star Machinery Company—Seattle, Spokane

WEST VIRGINIA
Equipment Distributors, Inc.—Charleston

WISCONSIN
Hunter Tractor & Machinery Co.—Milwaukee,
Green Bay

WYOMING
Keremi Tractor & Equip. Co.—Cheyenne, Casper

CANADA
Precision Machine & Foundry—Calgary, Alberta
West Coast Equipment, Ltd.—Vancouver, B. C.
Hub Equipment, Ltd.—Brockville, Cornwall and
Toronto, Ont.
Modern Machinery, Ltd.—Quebec City and
Montreal, Quebec



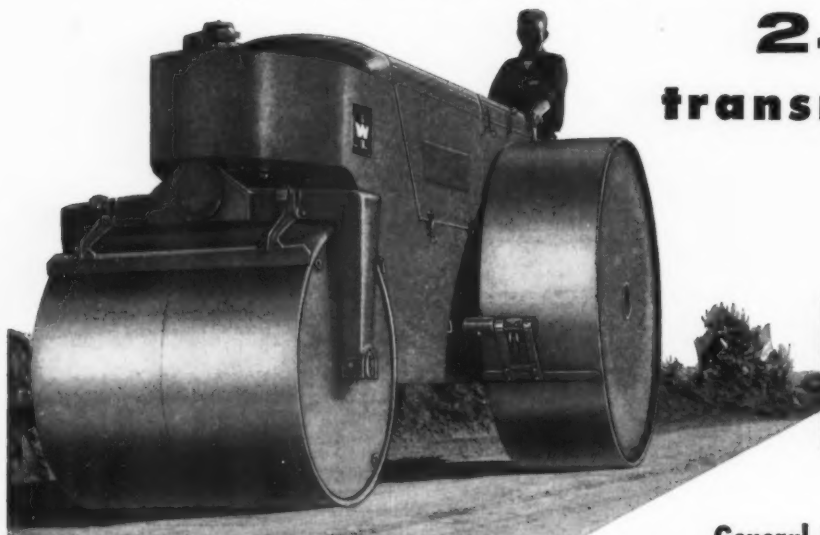
A steel trestle for dam projects like this is only one of the many uses the booming construction industry has for steel. To match the rapid growth of highways, buildings, bridges, and dams, the steel industry is increasing its production.

Steel—the rugged centenarian

"all new MODERN design"

torque converter

**2-speed
transmission**



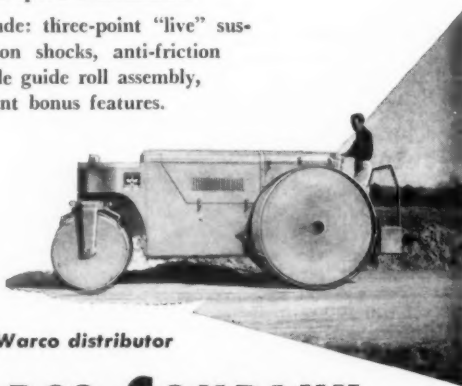
**General Purpose • Finishing
or Variable Weight**

Huber-Warco's newly-designed 3-wheel roller is a powerful, rugged machine built for economy, performance and durability. Greater roller efficiency is achieved by the use of a torque converter, tail-shaft governor and 2-speed transmission.

Other important features include: three-point "live" suspension of the sub-frame to cushion shocks, anti-friction bearings throughout, completely adjustable guide roll assembly, dual braking systems, and many other important bonus features.

Huber-Warco 3-wheel roller can be supplied with variable weight rolls, or with cast iron rolls, in various sizes, for general purpose or finishing work.

See your Huber-Warco distributor for complete details. The Huber-Warco 3-wheel roller is the most modern, dependable roller you can buy.



For a demonstration—see your nearest Huber-Warco distributor



HUBER-WARCO COMPANY

MARION, OHIO, U. S. A.

Road Machinery

CABLE ADDRESS: HUBARCO

ROAD ROLLERS • MOTOR GRADERS • MAINTAINERS • GRINDERS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 212

The steel industry, which celebrates its 100th anniversary this month, has as its second biggest customer the construction industry. The latter's plans for expanded activity over the next decade depend on the supply of fabricated structural shapes and plates, steel pipe and conduit, reinforcing bars and wires, and sheet piling, rails, and nails. Today's \$12 billion steel industry has produced more than 117 million net tons in a single year, or 40 per cent of the world's total—a skyrocketing growth as compared to the 10,000 tons turned out in 1857.

At that time, small amounts of steel and iron were produced by laborious hand methods at scattered plants across the nation. It was not until the mid-1850's that a revolutionary pneumatic steel-making process was discovered by William Kelly and Sir Henry Bessemer, and the Steel Age began in America.

Gradually this process was improved and expanded to include cold rolled steel bars; open hearth furnaces; continuous rod mills which supplied long strands of wire for telegraph and bridge cables; seamless steel pipe; and electric arc steelmaking furnaces supplying fine alloy steels for high speed tools.

By the 1920's one of the steel industry's most ingenious machines was unveiled—the continuous rolling mill that turned out wide thin sheets of steel. Recent years have seen such developments as continuous casting of billets and slabs from molten steel; the shaping of steel by hot extrusion through die instead of by rolling, casting, or forging; and the oxygen converter method of steelmaking which results in cheaper and faster production of high-quality, low-carbon steels.

The skyrocketing growth of America's steel industry is clearly seen in the Steel Centennial exhibit in New York City's Pennsylvania Station. The exhibit shows every field where steel is used—construction, railroads, factories, weapons, and appliances, to name a few.

Now in the midst of its greatest peacetime expansion, the industry plans to add 15 million tons of new capacity between 1956 and the end of 1958.

That is the steel industry today, far different from 100 years ago when two men 3,000 miles apart—Kelly in the U. S. and Bessemer in England—were striving to solve the same problem—how to mass produce man's most valuable metal.

THE END

CONTRACTORS AND ENGINEERS

with Hydraulic Load-Shock-Absorber

a **PAYLOADER®** DELIVERS MORE!



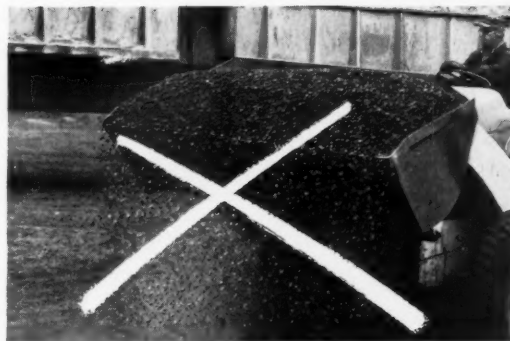
LESS SPILLAGE means MORE YARDAGE

It's the yardage you *deliver* that counts — not how much you *dig*. The difference is the spillage that occurs between digging and dumping points—the amount you handle for nothing.

"PAYLOADER" tractor-shovels are designed to *deliver* more yardage—to dig big loads and to move them with the least spillage loss—because "PAYLOADER" and only "PAYLOADER" among wheeled tractor-shovels has hydraulic load-shock-absorber as standard equipment—that cushions the loaded bucket, eliminates bucket jounce, smooths the ride, and permits higher carrying speeds with less spillage. Other "PAYLOADER" design features that reduce spillage losses are the longer wheelbase and the low, close and stable load-carry position with bucket in full 40° tip-back just off the ground.

You get more performance from a "PAYLOADER" because you get more tractor-shovel . . . power-transfer differentials, no-stop power-shift transmission, planetary final drives, power-steer, 4-wheel power-brakes . . . closed, pressure-controlled hydraulic system . . . powerful pry-out digging action.

Your "PAYLOADER" Distributor is ready to prove that a "PAYLOADER" can out-perform anything in its class—to have you try one on *your* work and let *you* be the judge. Call him today.



PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY



For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 213

THE FRANK G. HOUGH CO.

762 Sunnyside Ave., Libertyville, Ill.

Send full data on 4-wheel-drive tractor-shovels
as checked:

☐ Model HO 2 1/4 yd. payload 1 1/4 yd. struck ☐ Model HH 1 1/4 yd. payload 1 1/4 yd. struck ☐ Model HU 1 1/2 yd. payload 1 yd. struck

Name _____

Title _____

Company _____

Street _____

City _____

State _____

70

Crews now working two shifts to speed earthwork on dam

Racing a December 31 completion date on the Wesley E. Seale Dam near Mathis, Texas, H. B. Zachry Co., San Antonio, is making the big push this summer by increasing its dirt crew to two shifts.

These are working 9 hours 6 days a week on the \$6,720,000 earth-fill and concrete structure that is scheduled to start impounding water in September to form a 27-mile-long lake containing 360,000 acre-feet of water. Designed by Amburson Engineering Corp., New York and Houston, and Reagen & McCaugham, consulting engineers, Corpus Christi, the dam is being built by the Lower Nueces Water Supply District to assure an adequate and dependable supply of water for the city of Corpus Christi. At present the city's reservoir, Lake Corpus Christi, lies behind a dam built in 1935. Rather than increase the height of the present dam, the water district is building the Wesley E. Seale Dam to increase the water supply for the growing city.

Altogether, some 1,050,000 yards of dirt and rock are being moved for the structure, which will rise 75 feet above the Nueces River and stretch 6,000 feet across the valley. The dam consists of a 2,200-foot-long north embankment; an 86-bay north spillway, 1,320 feet long; a 900-foot center embankment; a 66-bay south spillway 1,080 feet long; and an 800-foot south embankment.

Embankments ready by August

Construction of the 500,000-yard north embankment, started last July and scheduled to be finished by August, is being done at odd intervals when work cannot be done on the other embankments. Excavation for the core trench for the south embankment has been completed, and this 50,000 yard embankment, also scheduled to be ready by August, is now being built.

Four Caterpillar DW20 tractors pulling No. 456 lowbowl scrapers are bringing borrow to the earth-fill sections, which will be 12 feet wide at the top and have 3 to 1 slopes on the upstream face and 2½ to 1 slopes on the downstream face. Push-loaded by an Ateco ripper, the scrapers cycle the 2,000-foot haul in an average of 5½ minutes.

As a Cat D8 tractor-dozzer shapes up the shallow lifts and breaks clods, it pulls a Rome disk to mix water into the fill. Another D8 with a 60-



Cat DW20 tractors with No. 456 scrapers keep dumping fill for the north embankment, while a Cat D8 with Rome disk breaks up the material and mixes in water. Another D8 pulls the 60-inch sheepfoot roller that handles compaction.

put your name
on a low-cost
**LORAIN
107**

for "BIG-JOB" PROFITS



**7 or 8-ton Crane
¾-yd. Shovel, Hoe
Dragline, Clamshell**

When you take that next step—when you are ready to buy that big shovel-crane to take advantage of the profitable bigger jobs in the expanding industry—be sure it's one that will pay off, as you have a right to expect. Consider these facts before you buy:

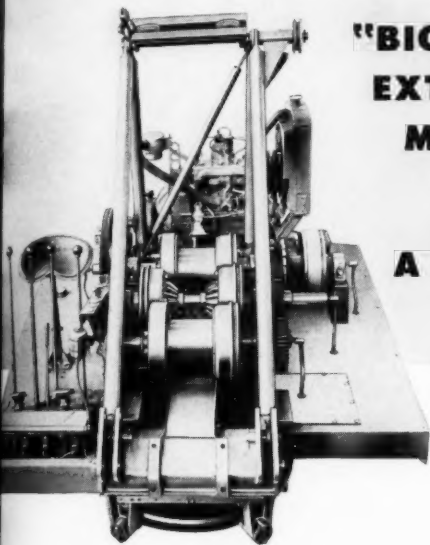
Your job and profit potentials. The Lorain-107 will open the door to dozens of jobs. This one machine can make money excavating, trenching, backfilling, erecting steel, laying pipe, lifting, loading, unloading—uses are almost unlimited. And because the "107" is a mobile, high-speed, rubber-tire machine, it will go anywhere under its own power—you drive it yourself—save trailer transport costs—move over city street or highway, rough grade or fill. Even on big contracts there are lots of "odd jobs" the economical "107" can handle profitably instead of tying up bigger equipment. If you want to "hang out your shingle" and go get your share of local shovel-crane work, the Lorain-107 will start you on your way to a successful, profitable future.

What your name on a Lorain means. Let's look at the Lorain-107 as an investment—for profit! In the Lorain line, the "107" is the smallest machine we make—and that's good for you. Lorain builds many larger models of the highest quality, and the same experience, engineering "know-how" and manufacturing precision that we put into the design and construction of these machines go into the "107" also. A few specific advantages of the "107" are listed on the opposite page. Check them. Analyze each one. See how every detail adds up to the biggest value in a 7 or 8-ton machine. Chances are, your name on a bright yellow Lorain-107 will bring new business your way. Your customers will know you use the best!

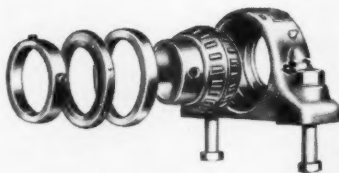
Now—call your Thew-Lorain Distributor for proof!

CONTRACTORS AND ENGINEERS

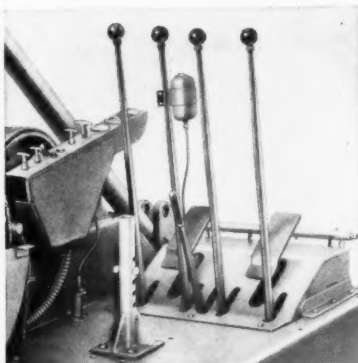
In the borrow pit, a No. 456 scraper gets a push-loading assist from an International TD-24 that carries an Ateco ripper. Though the rigs have a 2,000-foot haul from the borrow pit to the north embankment, they make the cycle in an average of 5½ minutes.



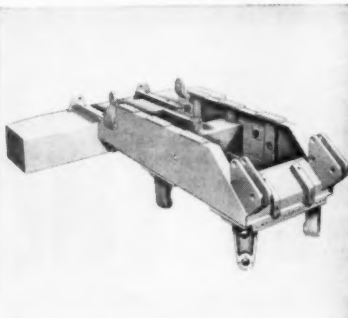
**"BIG-MACHINE"
EXTRAS THAT
MAKE THE
107
A BARGAIN
BUY**



ANTI-FRICTION BEARINGS — Main Hoist Drum Shaft, Swing Shaft, Secondary Hoist Drum Shaft—wherever Lorain quality dictates, there you will find long-life, anti-friction bearings.



HYDRAULIC CONTROLS — convenient, easy-acting hydraulic power controls actuate 5 identical clutches for the smoothest, most effortless operation.



BOX SECTION TURNTABLE BED—heavier, stronger, more rigid; a massive, pre-formed weldment for lifetime machinery alignment.

- **CHOICE OF 2 CARRIERS**—"6x4" Moto-Crane or "6x6" Truck Crane. Speeds up to 45 m.p.h.
- **2-POSITION MOUNTING PLATE**—permits shifting turntable on either Carrier for best digging ranges or maximum lifting capacities.
- **HI-VISIBILITY—EASY OPERATION**—all controls in front of operator; entire front cab panel is of glass.
- **20% BIGGER BRAKES**—new Hoist Brakes more fully wrap around drums—20% more surface—longer life.
- **5 INTERCHANGEABLE CLUTCHES**—each clutch operated independently by hydraulic power; all clutches identical and interchangeable.
- **HEAT-TREATED TURNTABLE ROLLERS**—both top and hook rollers induction hardened for long life; extra-heavy roller pins. Bottom rollers adjustable.
- **MACHINE CUT SPUR GEARS**—precision cut gear teeth transmit power smoothly—quietly, in perfect mesh.
- **2 TYPES OF CRANE BOOMS**—choice of angle-chord boom for 7-ton machine—or new, exclusive Lorain square-tubular-chord design for 8-ton duty... lighter yet stronger.
- **THERE ARE MANY MORE**—ask your Thew-Lorain Distributor to explain every one in detail!

The Thew Shovel Co., Lorain, Ohio



THEW LORAIN®

inch sheepfoot roller compacts the clay to 95 per cent density.

As embankment sections are completed, five Euclid 5-yard dump trucks, loaded in a pit 27 miles from the site, spread riprap in 2-foot layers over the 3 to 1 slopes on the upstream face and in 1½-foot layers on 2½ to 1 slopes on the lower half of the downstream face. Trucks are lowered down the slopes on the winch cable of a Cat D8 tractor positioned atop the embankment. As the shovel spreads riprap, five laborers sort rock and fill the voids.

Each spillway section, of structural concrete, has 30-inch buttresses rising between each 37-foot 8-inch bay. Concrete aprons are being poured over the facings of the spillway between each buttress. The south section has six bays on each end, with permanent outlets flanking the center section of 54 bays. The north section is of similar construction, with 66 bays in the center.

The normal river runoff will be provided through the four permanent outlets. Extraordinary flows will be controlled through the steel floodgates, 55 feet above the base. Each 37-foot, 8-inch floodgate counter-weighted with 42,000 pounds will drop to the rear to open.

Personnel

The 280 men on the Zachry payroll are under the direction of J. A. Downey, project manager. Downey is assisted by Carl M. Fisher, project engineer; D. V. Moore, concrete superintendent; W. R. Blackmon, dirt superintendent, and Bob Sears, office manager. B. G. Bryan is the resident engineer.

THE END

Shore resort studies overhead monorail system

A proposal to erect an overhead monorail system along the Asbury Park, N. J., boardwalk and a section of the business area is being studied by the mayor and the city council. A similar system is now operating in Germany and on a limited scale in Houston, Texas.

The system would be installed along the easterly edge of the boardwalk from Convention Hall to the Casino, and then to Wesley Lake and the main business area. Cars, capable of carrying 69 passengers, would operate on a single rail 20 feet above traffic. Each car is designed to run singly or in units of two or more.

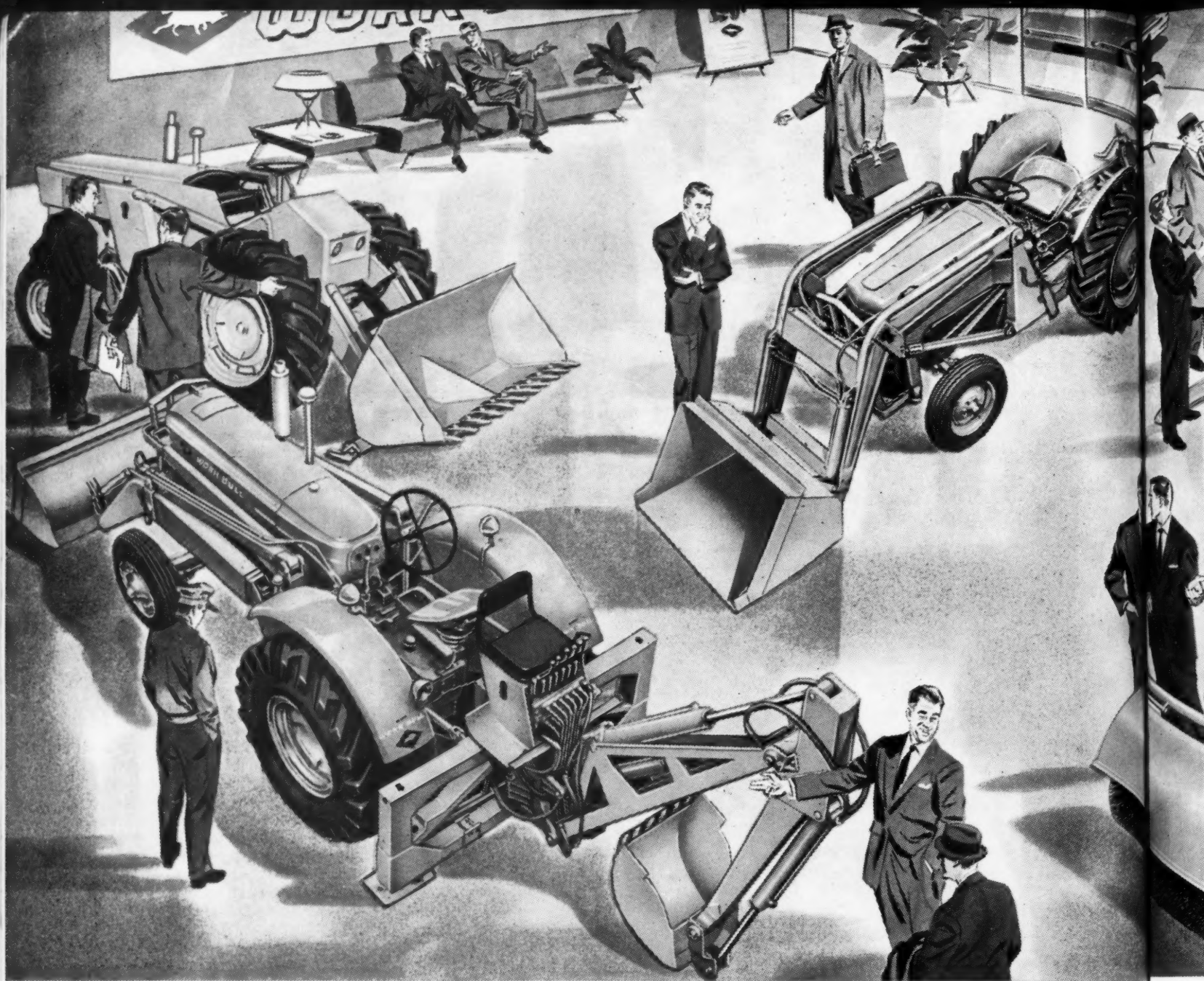
←For more facts, use coupon or circle No. 214



MAIL THIS COUPON NOW
for your copy of the Lorain-107 Catalog. Gives you design facts with many illustrations of details.

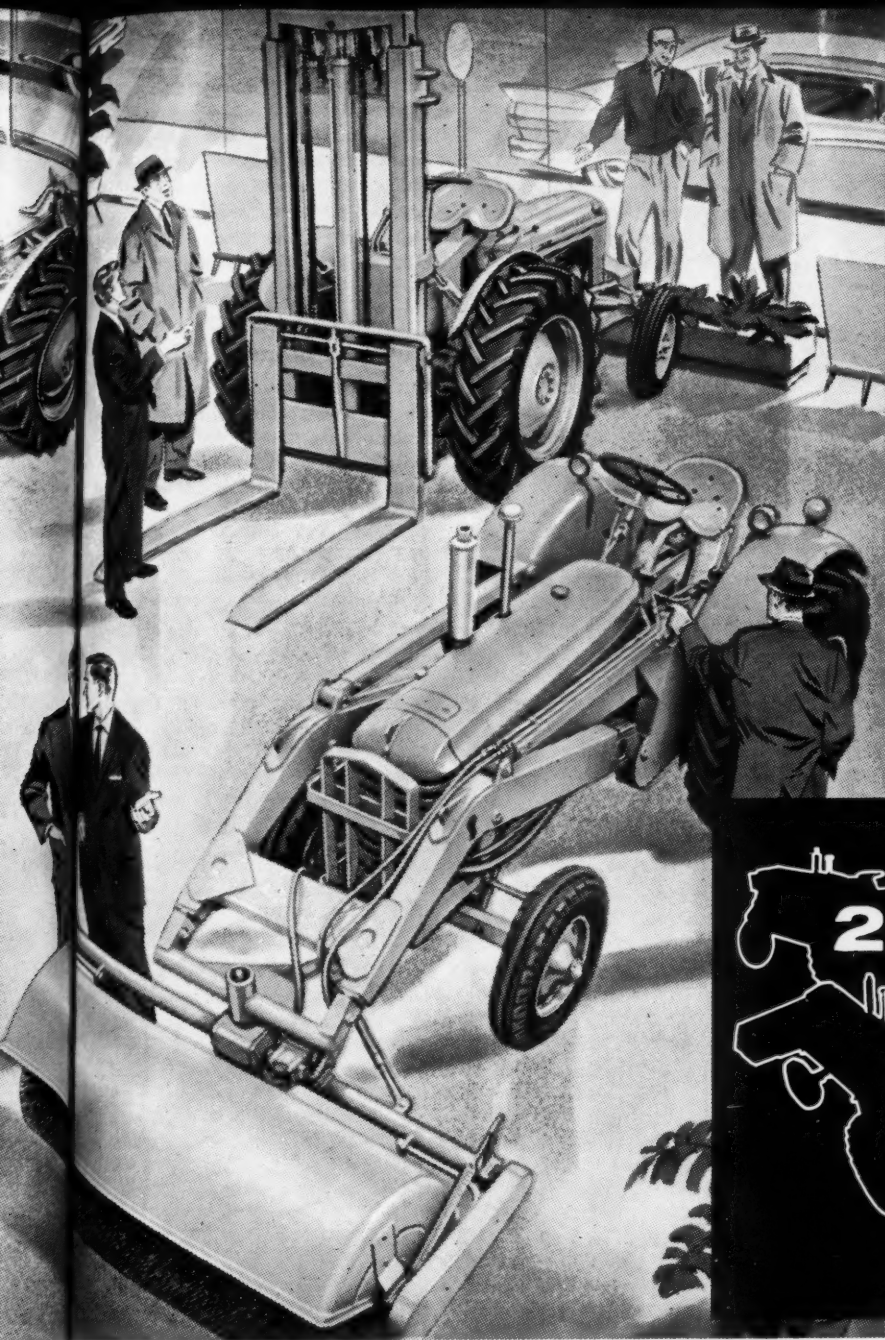
The Thew Shovel Co.
Lorain, Ohio

Name _____
Title _____
Company _____
Street _____
City _____ State _____



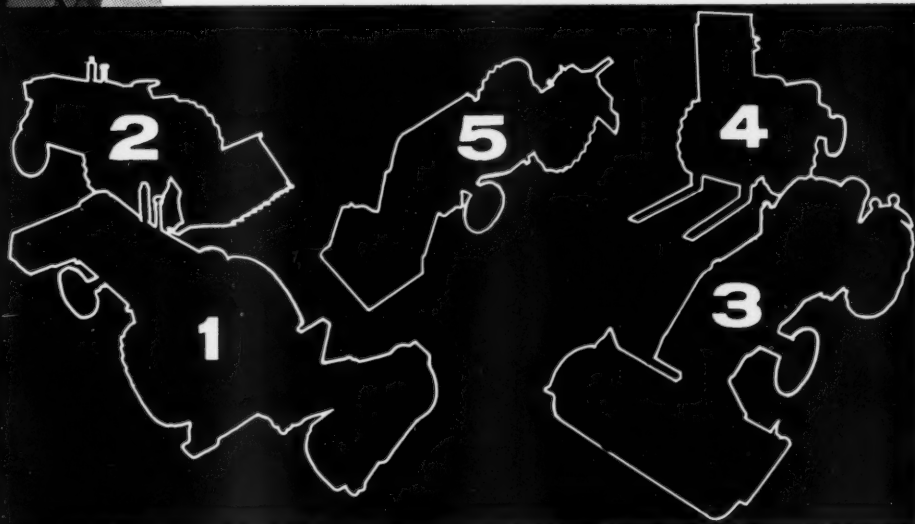
5 tractors, 20 interchangeable attachments--

**new family of
power-matched packages**



Tractors and attachments — designed for each other

1. 52-hp Work Bull Model 404 tractor. $\frac{3}{4}$ -yd. Model 500 loader. Model 185 backhoe.
2. 42-hp Davis Pit Bull. Model 500 loader with $\frac{7}{8}$ -yd. bucket. Scarifier.
3. 42-hp Work Bull Model 303 tractor. Hydraulically-controlled, 8-ft. broom.
4. Model 202 Fork Lift with 10-ft. mast (Std.) for lifts of up to 4000 lbs. 21-ft. mast for lighter loads.
5. 34-hp Work Bull Model 202 with rear-mounted multi-purpose, adjustable angle blade and . . . Model 102 loader with 11 cu. ft. hydraulic bucket and down-pressure cylinders.



WORK BULLS PAY OFF as high-performance, money-saving units on scores of jobs

THE reason — integrated design! Both tractors and attachments are designed for *multiple machine versatility*. For example — a Work Bull with a loader also mounts more than a dozen other interchangeable attachments that quickly, easily convert the same tractor into a highly efficient backhoe, fork lift, swinging crane, grader or any of many other highly efficient tools. And at a surprisingly low cost!

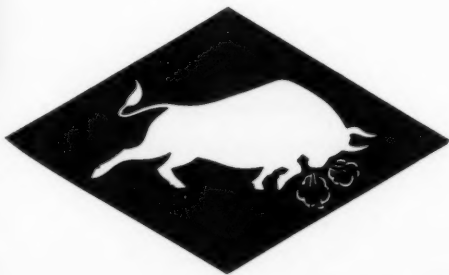
In five to 15 minutes you can mount or dismount any Work Bull attachment. Switching involves merely

one man — no wrenches, no special gear. And front-end attachments utilize the same hydraulic arms and frame. Backhoe attaches or detaches in less than 5 minutes!

Check the list of Work Bull attachments. Choose the loader, blade, fork lift, mower, backhoe, snow plow, auger, broom, pipe and cable layer and others to meet your specific needs.

Get full details and the name of your nearest distributor. Write for 24-page catalog.

And you have a single source, one responsibility for sales and service on both tractors and attachments!



M·H·F WORK BULLS

Division of Massey-Harris-Ferguson, Inc.

20-E Quality Avenue

Racine, Wisconsin

For more facts, use Reader-Reply Card opposite page 18 and circle No. 216

Names in the news

Kenneth F. Goodson, resident manager of the Henry J. Kaiser Construction Co.



Kaiser Engineers appoint Goodson resident manager

Kaiser Engineers, Oakland, Calif., have appointed Kenneth F. Goodson resident manager of the Henry J. Kaiser Construction Co., Ravenswood, W. Va. In his new assignment, Goodson will be responsible for all construction and related activities at the new Kaiser Aluminum & Chemical Corp. reduction and rolling mill, a \$200 million project currently under construction.

Goodson, a heavy industrial construction specialist, was formerly general manager for Hedrick-Grove in charge of construction for the NATO air base at Keflavik, Iceland. The project included construction of runways, hangars, barracks, terminal building, and tower. He has worked on other projects in Okinawa, Japan, Alaska, Canada, and Mexico.

Former U. S. road chief dies of heart attack

Thomas H. MacDonald, chief of the U. S. Bureau of Public Roads for 34 years, died of a heart attack early last month. At the time of his death MacDonald was "Distinguished Research Engineer" at Texas A&M College.

He joined the newly created BPR in 1919 as its chief. At that time there were only 272,000 miles of roads in the country; when he retired in 1953, there were more than 3,300,000 miles of roads. During his time of office, MacDonald helped plan the 1,523-mile Alaska Highway and the Inter-America Highway. President Harry S. Truman awarded him the Medal of Merit for his roadbuilding activities in World War II.

MacDonald firmly believed that the role of Federal government is not to dictate to the states, cities or counties, but through the state legislatures and their highway departments to help their cities and counties in administering work.

WRI joins ICBO

The Wire Reinforcement Institute has been named a member of the International Conference of Building Officials. As a member of the Conference, the Wire Reinforcement Institute will aid in interpretation and formulation of code provisions affecting steel reinforcement, particularly welded wire fabric, in reinforced portland-cement concrete construction.

Mackie elected Michigan highway commissioner

In a state-wide election John C. Mackie was voted Michigan's highway commissioner. His election climaxed a long political battle that was one of the major issues of the state election. Mackie, former Flint County engineer, succeeds Charles M. Ziegler.

Gen. Hardin, division engineer, to resign

Maj. Gen. John R. Hardin, president of the Mississippi River Commission and division engineer. Lower

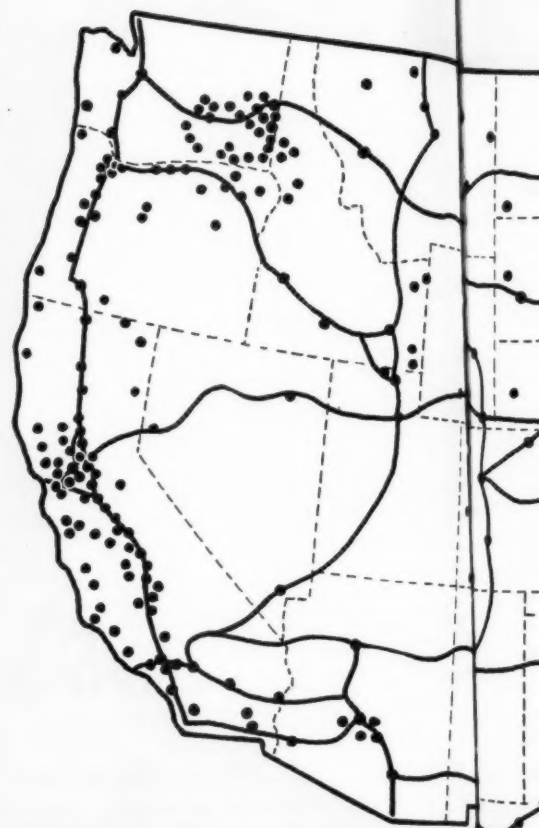
Mississippi Valley Division, has submitted his request for retirement from the Army, effective June 30, after more than 38 years of service.

Under Gen. Hardin's guidance, substantial progress has been made toward furthering the completion of the flood control and navigation project in the lower Mississippi River Valley. He has also been associated with the Old River Control project, which will prevent the Mississippi River from changing its course to the Gulf of Mexico by way of the Atchafalaya River; and the new tidewater channel to the Gulf from New Orleans.

Col. John S. Hartnett will become district engineer for San Francisco, Calif., in July. Col. Hartnett, now assistant division engineer, South Pacific Division, will succeed Col. John A. Graf, who will attend the Industrial College of the Armed Forces, Washington, D. C.

Wyoming Highway Dep't. announces promotions

The following changes have been made in the Wyoming highway department: Glen T. Shrum has been transferred to the maintenance division as assistant maintenance engi-



Caterpillar Dealer sales and service along the Interstate Highway System

Write today for free booklet, "The Road Ahead," with full details of the Federal-Aid Highway program.



Caterpillar Tractor Co., Dept. CE-5, Peoria, Illinois

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ONE GOAL
To concentrate the capabilities, resources and experience of our people and of the world-wide Caterpillar dealer organization on the design, manufacture, distribution and service of job tested heavy equipment....
CATERPILLAR TRACTOR CO.

neer. Shrum's former position as assistant state construction engineer has been taken by Oliver F. Baldwin who was originally district engineer at Rock Springs, Wyoming. W. G. Ainsley has been promoted to take Baldwin's place. His former position of district maintenance engineer for the Sheridan area will be covered by G. H. Saffell. Saffell was a project engineer at Sheridan.

Adrian G. Clary has become project engineer at Sheridan. His former position at Worland has been taken by John H. Milan who was originally assistant project engineer at Lander. Kirby H. Olds, road design engineer,

has become assistant plans and office engineer. E. A. Bass, former assistant road design engineer takes Old's place. The new assistant road design engineer will be Willard M. Anderson, principal road designer.

Astor Plaza elects Hedden

Warren R. Hedden has been elected vice president in charge of construction for Astor Plaza, the new \$75 million building project to be erected in New York City by Astor Plaza, Inc., New York. Hedden was formerly with Paul Tishman, General Contractor, Inc., where he held the same position.

Engineer establishes university scholarship

A perpetual endowment scholarship for civil engineering students has been established at Stanford University, Stanford, Calif., by Mr. and Mrs. D. Lee Narver. Narver is Board chairman of Holmes & Narver, Inc., Los Angeles engineers and constructors. The \$20,000 "Lee and Vida Narver Civil Engineering Scholarship" will provide full tuition for one student or partial tuition for two, at the discretion of the University.

To be eligible for the scholarship, applicants must be male residents of

Southern California in definite need of aid. In addition, they must be civil engineering students, and have high scholarship and leadership potential.

The scholarship may be used for fifth and sixth years of study if it has carried the student through his undergraduate work.

Formosan to study state highway department

Lang-hsing Yiu, chief of the equipment bureau, Road Maintenance Department of the Taiwan, Formosa, Highway Bureau, has begun a course of study in the Pennsylvania State Department of Highways. The assignment of Mr. Yiu to the department was arranged by the International Cooperation Administration through the U. S. Bureau of Public Roads.

The Bureau of Public Roads selected Pennsylvania because the scope and efficiency of its road equipment program will provide Mr. Yiu with a good insight into American highway-equipment operation and maintenance. He will also study the department's administration and operations in the Harrisburg Central Garage, and spend the remainder of his time in the field.

Rader firm names engineer

Ralph Birchard has joined the staff of Rader & Associates, engineers and architects of Miami, Fla. Birchard was the former chief of the specifications, estimates, and reports branch of the Air Force Academy construction agency that built the \$125 million installation near Colorado Springs, Colo.

Pa. highway news

The Pennsylvania Department of Highways has named A. M. Larsen an executive of the engineering division. Larsen was formerly the department personnel director.

The new director of personnel will be R. S. Winchester. Until the present time, Winchester has served the City of Philadelphia as a personnel officer.

AISC honors Steinman

Dr. David B. Steinman has received the J. Lloyd Kimbrough Medal from the American Institute of Steel Construction for his outstanding contribution to the structural steel industry for the design of steel structures. The award was made at the AISC's office in New York City and the presentation was followed by a luncheon at the Biltmore Hotel.

ACPA elects officers

Carl A. Bluedorn was re-elected president of the American Concrete Pipe Association at the society's convention in Washington, D. C. Also elected were E. F. Bepalow, J. W. Corsan, and Peter Van Kuran, vice presidents; John H. Bailey, secretary; and Craig J. Cain, treasurer. Four directors were elected.

CATERPILLAR-ONE GOAL



ONE GOAL... To concentrate the capabilities, resources and experience of our people and of the world-wide Caterpillar Dealer organization on the design, manufacture, distribution and service of job-tested heavy equipment. ...

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



Though hauls for the random fill material are short, this Euclid loader keeps a fleet of ten Euclid bottom-dumps on the move. The loader is pushed and pulled by Allis-Chalmers HD-20 tractors, and the operator of the lead tractor has his seat turned to the side so that he can look both backward and forward.

Earthmoving, concrete placing moves ahead on Ferrells Bridge Dam

Shortage of clay soil for impervious core means long hauls and additional compaction

Draglines, a Euclid loader, and a spread of scrapers are joining forces to excavate and load the more than four million cubic yards of material required to construct the earth embankment of the Ferrells Bridge Dam across Cypress Creek near Jefferson, Texas.

At the same time, other crews are building forms and placing the 35,000 cubic yards of concrete and 2.2 million pounds of reinforcing steel on the spillway and outlet structures of the dam.

These and other operations are combined in a \$5.78-million contract scheduled for completion during the summer of 1959. The general contractor on the project is Potashnik Construction, Inc., Cape Girardeau, Mo. Design and supervision of construction are under the direction of the New Orleans District of the U. S. Army Corps of Engineers.

A shortage of good clay soil in the area that is suitable for the impervious core of the dam led to the design of a cross section that is planned to minimize the volume of impervious material required. Because of this shortage and because of the presence of layers of sand in the clay deposits, the materials for the impervious portion of the dam have to be carefully

Three of the eight Cat DW21 scrapers on the job excavate sandy material from the approach channel of the outlet works. Cat D8 tractors, which sometimes double up to speed the loading cycle, push-load the earth-movers.



Material going into the fill is shaped by a Caterpillar D7 tractor-dozer.



The impervious backfill in the core trench, built up in 9-inch compacted layers, is scarified by a Rome 18-inch tandem disk, pulled by an International WD-9 tractor, to insure a bond with subsequent lifts.



Water for optimum compaction, a critical factor in the impervious section of the dam, is applied to the fill by a Euclid 5,000-gallon water wagon. Compaction is achieved with Gebhard sheepfoot rollers pulled by a Cat D8.





As the dam grows higher, rigs start working in closer quarters. The Gebhard sheepsfoot, pulled by the Cat D8, is followed by Euclid bottom-dumps, a Cat No. 12 motor grader that shapes the fill, and a Cat D8 pulling a Bros 50-ton compactor.

selected, placed, and compacted.

The Ferrells Bridge Dam and Reservoir are part of a comprehensive plan for flood control in the Red River and its tributaries below Denison Dam. In addition to a storage capacity of 587,200 acre-feet of flood water, the reservoir will hold 251,000 acre-feet of storage for the water supplies of nearby municipalities. Extensive recreational facilities will be provided incidental to construction.

Dam 2 miles long

The dam, with a maximum height of 97 feet above the stream bed, will be 10,600 feet long. Normal flows of the stream will be released through two 10-foot-diameter gated conduits that pass through the dam. The 200-foot-wide uncontrolled spillway has its crest at the elevation of the top of the flood control pool and has a capacity of 68,200 cfs. A highway bridge will span the spillway, and the top of the dam will be made into a roadway.

A study of the typical section of the earth embankment of the dam discloses a relatively light impervious section on the upstream side of the axis protected from wave action on the reservoir by two layers of filter material and stone riprap. The downstream portion of the section is random fill material with a pervious blanket, 18 inches thick, extending from the downstream toe along the land-side third of the dam's base.

The impervious section is tied into the underlying Queen City clays by a core trench that has been back-filled with compacted impervious material. This core trench is 15-feet-wide at the bottom end and it extends to a 2-foot depth in the clay along the full length of the embankment. The center of this core trench is located 150 feet upstream from the axis of the dam. From the top of the clay, the core trench extends up, with 1 to 1 side slopes, through the recent alluvium in the stream and valley. The upstream face of the dam has a slope of $3\frac{1}{2}$ to 1 near the bottom and to $2\frac{1}{2}$ to 1 near the top. All of the impervious section lies upstream of the dam axis.

The random material making up the remainder of the dam is underlaid with a blanket of pervious material on the valley floor. The entire downstream portion and part of the upstream section of the dam are

(Continued on next page)



because of the HANCOCK'S ELEVATOR

**No other Scraper
can move so much
dirt, so fast!**

Because the Hancock Scraper elevates material instead of force loading it, you get high speed loading and move more dirt with less horsepower.



The Hancock Elevating Scraper has the features to give you lowest-cost-per-yard of earth moved. With the elevator continually removing the dirt from around the cutting blade and distributing it evenly throughout the scraper, you get a balanced load at all times. The Hancock 11 Yard Elevating Scraper is hydraulically controlled, works efficiently with any tractor of 60 horsepower or over, and turns in only 28 feet.

HANCOCK MANUFACTURING CO

PO3-8297 Lubbock, Texas

Patents Pending



These HANCOCK features mean

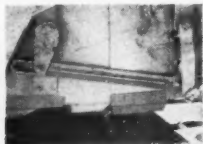
of earth moved.



FIFTH WHEEL — Extreme flexibility and simple adjustment result from ball joint type fifth-wheel.



WHEELS — Scraper has heavy-duty wheels, standard industrial tires and standard wheel bearings.



SPREADING UNIT — Delayed dumping of the front bucket permits controlled release and spreading of dirt.

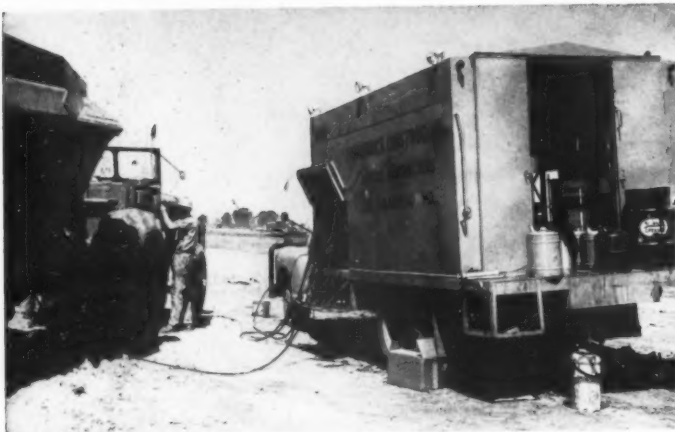


GEARBOX and ELEVATOR — Heavy duty elevator frame is combined with a strong, rugged, trouble-free gear box.



REAR AXLE — Simple but rugged rear axle construction provides for easy alignment to assure level cut.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 217



The contractor's maintenance setup includes a lube rig which services each piece of equipment like this Euclid water wagon, during every shift. The Chevrolet truck carries a Curtis compressor, Kohler generator, Lincoln pumps and reel, and fire extinguishers.

(Continued from preceding page)

made up of this random material. The top of the dam forms a 30-foot-wide surfaced roadway.

Dig, backfill core trench

The job of clearing trees, brush, stumps, and debris from the area of the dam foundation was sublet to John D. Wright of Talco, Texas, which used a spread of International TD-24 tractor-dozers for the job.

As soon as the way was clear, cranes with Hendrix 3½-yard drag-line buckets started excavation of the core trench. The trench averaged about 30 feet deep across the valley and in a few places it went to a maximum depth of over 35 feet.

The draglines loaded this excavation into Euclid 15-yard bottom-dump haul units. Some of the material, suitable for portions of the dam embankment, was hauled directly into place.

As the core trench excavation went down, and it became necessary to lower the ground water in the area, two stages of Moretrench wellpoints were installed. The 2-inch wellpoints on 20-foot pipes, installed at 2-foot centers along both sides of the trench, were connected to 10-inch headers. These were pumped by a series of six 10-inch butane-powered Moretrench pumps. This system drew the ground water down as much as 40 feet and enabled the excavation to be carried on in the dry.

When a section of the trench had been excavated into the underlying Queen City clay, it was backfilled with impervious material hauled in from the reservoir area borrow pits by a spread of Caterpillar DW21 scrapers.

This spread included eight of the big Cat scrapers, and these were push-loaded by three Caterpillar D8 tractors. During the early stages of the project, the material for the impervious section was obtained from borrow pits in the reservoir area within a half-mile haul. Later, as these pits were exhausted, the hauls for this material increased to a mile or more.

The impervious backfill in the core trench was built up in 9-inch compacted layers, each carefully placed

and compacted. Before a new lift was started, the surface of the preceding lift was disked by a Rome 18-inch disk pulled by an International WD-9 wheel tractor to provide bond with the new material. This surface was watered when necessary during dry weather before the scrapers spread the next lift.

The scrapers then spread the material for another 9-inch lift, and Caterpillar D7 and D8 tractor-dozers shaped it to the proper depth. Water trucks applied the required amount of moisture for optimum compaction. The water was worked into the material by Rome 30-inch disks pulled by Cat D8 tractors. Big Gebhard sheeps-foot rollers, pulled in pairs by Cat D8 tractors, compacted the lift until they walked out. A final rolling was ap-

plied by Bros 50-ton rubber-tire compactors pulled by D8 tractors.

As the core trench was filled and the embankment began to rise above the valley floor, both the impervious and random sections were placed by this same method. In addition to the Caterpillar DW21 scrapers hauling in impervious material, the contractor had five Euclid bottom-dumps hauling from each of the two draglines.

Sandy material for the pervious blanket under the random section of the dam, obtained from Gifford-Hill & Co., Inc., at Texarkana, Texas, was shipped by rail to a Burford siding, unloaded, and hauled by trucks to the dam site.

Loader handles random fill

Material for the random section

The Mighty Mackinac...World's lon



Main cables being compacted by jacks and bound with steel bands. Catwalks are supported on five 2¼" Tiger Brand Wire Ropes which will be pre-stressed and used later for vertical suspenders.

Clamping main cable. Workman prepares to clamp a bundle of 340 wires into a strand. Thirty-seven strands will make up the completed cable, two feet in diameter.

Quick facts about the Mackinac Bridge

Owner: State of Michigan, Mackinac Bridge Authority, Prentiss M. Brown, Chairman

Designer: Dr. David B. Steinman

Substructure Contractor: Merritt-Chapman & Scott Corporation
Superstructure Contractor: American Bridge Division, United States Steel

Wire Rope Manufacturer:

American Steel & Wire Division, United States Steel

Total length: 26,444 feet • Suspension Bridge length: 8,614 ft. • Main Span length: 3,800 feet • Tower height above water: 552 feet • Total length cable wire: 41,000 miles • Total length wire rope suspenders: 125,000 feet. Wind resistance: 120 miles per hour • Approximate cost: 100 million dollars.

was obtained from borrow pits both upstream and downstream, and from the approach and discharge channels of the outlet works. Most of this material was picked by a Euclid loader pushed and pulled by a pair of Allis-Chalmers HD-20 tractors. Although the hauls for this class of material were shorter than those for the impervious material, the big loader was able to keep a fleet of 10 Euclid bottom-dumps operating at top speed.

On the embankment, this random material was spread, watered, disked, and compacted in exactly the same manner as the material for the impervious section.

As the embankment rose and began to take shape, a pair of Caterpillar D8 tractors with Cat 80 scrapers and several Caterpillar No. 12 motor grad-

ers took over the work of bringing the section to true shape and grade. This left the fast-moving rubber-tire haul equipment free to build the main fills without stopping to make minor corrections for grade and shape.

Water for the embankment, for sprinkling haul roads, and for other purposes was obtained from a deepened portion of Cypress Creek. It was delivered by two Gorman-Rupp 4-inch electric-powered pumps directly to a fleet of seven water tankers. These ranged from two Euclid 5,000-gallon units down to 1,550 and 1,000-gallon truck-mounted tanks.

Placing riprap

Protection for the upstream face of the dam, and protection of the approach and discharge channels from

erosion due to wave and current action, is provided by stone riprap. All of the riprap materials, including those for sand and gravel filter courses, had to be shipped long distances by rail, then trucked to the job and placed.

The materials include 85,000 cubic yards of stone for 24-inch riprap, 32,000 cubic yards of 18-inch riprap, 2,200 cubic yards of derrick stone, and the materials for the 4-inch course of filter sand and the 8-inch course of gravel underlying the riprap. The riprap material was produced by Houston Clinton & Co., Burnet, Texas, and delivered by rail to the Burford siding on the Louisiana & Arkansas Railroad about ten miles from the job.

The unloading, hauling, and plac-

ing of the riprap was done by Murray Limestone Products Co., Bolcourt, Kans., under a subcontract. Murray unloaded the materials with a pair of cranes equipped with orange-peel and clamshell buckets. A fleet of 15 new Ford dump trucks hauled the rock to the dam site, where it was dumped into place by the trucks. A Gradall straightened up the rocks and graded the slopes to the finished section.

Lubrication and maintenance

Lubrication and maintenance of the big fleet of earthmoving equipment was given careful attention in the Potashnick setup. Two Butler metal buildings, one 50x60 feet, and the other, 24x52 feet, housed the complete maintenance shops where any or all of the equipment could receive anything from minor adjustments to major overhauls.

Parts trailers parked nearby were well stocked with the most commonly needed parts, and skilled mechanics were on hand at all times to provide quick service.

A two-man crew with a well-equipped lube rig serviced each piece of equipment every working shift. The lube rig, an enclosed van on a Chevrolet truck, was assembled in Potashnick's shops. Included in the equipment were a Curtis compressor, a Kohler generator, seven Lincoln grease and oil pumps and the accompanying hose reels, a complete battery-maintenance kit, and two CO₂ fire extinguishers.

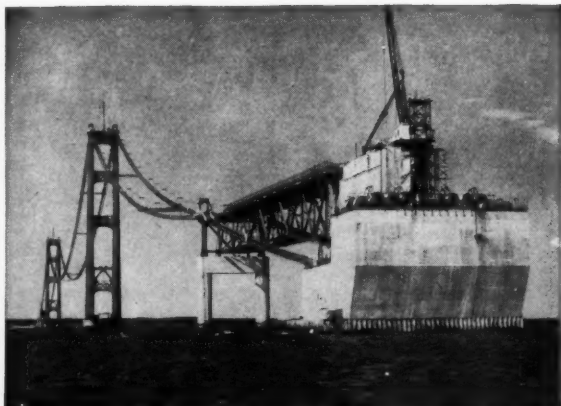
A Motorola mobile radio system kept all parts of the work in close communication and facilitated all types of emergency service—including fire, first aid, and equipment maintenance. In addition to the base station located in the field office and units in the shop and concrete plant, the contractor had 60-watt two-way mobile units installed in 11 vehicles used by the supervisory staff.

Backed by the Potashnick's firm belief in the value of a good safety program, safety engineer Bill Rainbolt has developed a comprehensive and effective program of safety. Every Monday, safety meetings are held with all job employees in attendance. The program is based on the word "Think", and the tin hat serves as a reminder of the need for each man to do his own thinking. The protective metal hats are worn by all employees on all parts of the job, even where there is no danger from falling objects. Posters supplied by the Aetna Insurance Co. boost the educational program, and regular visits from the insurance company's safety engineer help keep the program alive and active.

A fully equipped job ambulance, built from a converted Chevrolet, is always available to bring an injured man from work to the first aid room or to the nearest hospital. The fully equipped first aid room, air-conditioned for comfort, is also dust-free. Fortunately, the first aid and emergency equipment is seldom needed as the safety education program has been very effective. As of the first of this year the project had worked

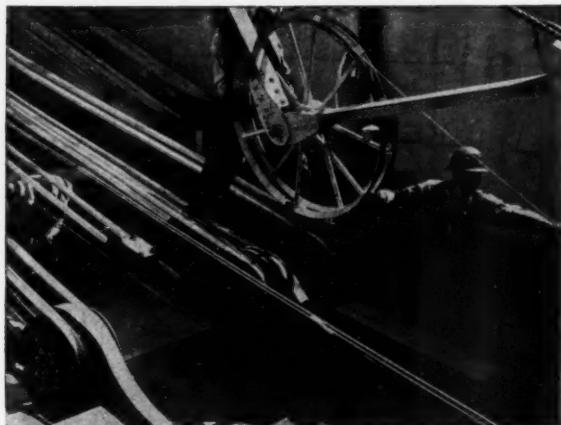
World's longest suspension bridge

... 8,614 ft.



Solid anchorage for the main cables, high as a 10-story building and covering an area equal to about one-third of a football field.

Key step in cable spinning operation. Workmen putting cable wire loop on the spinning wheel and adjusting wire on the anchors. Each cable is spun by two wheels shuttling back and forth; each wheel pulls two loops or four wires per trip from one anchorage to the other.



The new Mackinac suspension bridge spanning the straits between Mackinaw City and St. Ignace, Michigan is 8,614 feet long including anchorages. This makes it the world's longest single suspension bridge. The over-all length of the bridge with approaches is 26,444 feet. (The San Francisco-Oakland Bay bridge has a total length of 8 1/4 miles, but is in reality two bridges with an island between.)

When completed as a four-lane artery, the Mackinac bridge will link Michigan's upper and lower peninsulas. Cars can cross in 10 to 12 minutes—6,000 of them per hour. Contrast this with 45 to 55 minutes on car ferries with a total capacity of 416 cars an hour.

The two main towers are as high as 46-story buildings—552 feet above water level. Over these, two huge suspension cables have been "spun" from 41,000 miles of American Tiger Brand Galvanized Bridge Wire. These cables are two feet in diameter and will support the bridge floor through vertical suspenders of 2 1/4-inch-diameter Tiger Brand Galvanized Bridge Rope. A total of 125,000 feet of suspender ropes will be used in the completed bridge. These will be pre-stressed to remove structural stretch.

The ability of American Steel and Wire to engineer and produce the Bridge Wire and Wire Rope for jobs of this magnitude is proof of the superior quality you can expect from any type of Tiger Brand Wire Rope you need. Write for our latest book.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMERICAN TIGER BRAND WIRE ROPE

Excellently Preformed

UNITED STATES STEEL

For more facts, use Reader-Reply Card opposite page 18 and circle No. 218



419,017 man-hours and had experienced only one lost time accident.

Personnel

Supervising the work for Potashnick Construction, Inc., is Kenneth Damitz, project manager. Others on his staff are earthwork superintendent L. U. Spell, field engineer Robert M. Halpern, office engineer Ross Malzahn, and office manager B. A. Andrews. The superintendent for Murray Limestone Products Co. on the riprap operations is Carl T. Horton.

Supervising the construction for the New Orleans District of the Corps are resident engineer H. W. Fletcher and his two assistants, O. L. Stafford and Lt. E. G. Moffatt. This project falls under supervision of the Shreveport, La., office, which has H. E. McDowell as field assistant. The district engineer of the New Orleans District is Colonel W. H. Lewis. THE END

German firm patents beam for roof construction

The firm of Dreieck-Streben-Bau-Auswertung, in Munich, Germany, has developed a method of roof construction which reportedly results in a reduction of over fifty per cent on wood requirements for roofs and ceilings on many reconstruction projects throughout western Europe. Known as the DSB, this basic method employs a triangular type of strutted construction patterned after the Hess-Grafrath system.

The DSB beam consists of one upper and one lower flanged plank; the two planks are joined by a strutted system by means of agglutinants. The flanged planks transmit the tensile and compressive stresses while the strutted system absorbs the transverse forces. Points of intersection are fashioned without the use of screws, dowels, or nails by a method of small-area, bottleneck glueing; at each intersecting point there is a number of small glueing surfaces which can be increased or reduced as necessary, according to static requirements.

According to the company, the DSB beam, in addition to its timber saving factor, provides for a better distribution of stress and weight, eliminates warping, and results in a structure of considerably greater strength.

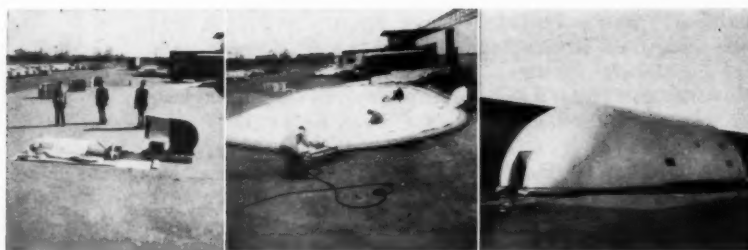
Corps releases film on Lookout Point Dam

A 28-minute sound color film, "Key to the Emerald Empire", on the construction of Lookout Point Dam on the Middle Fork Willamette River is now available for showing from the Portland, Oreg., district office of the U. S. Army Corps of Engineers.

The 16-mm film traces the building of the dam and Dexter Dam, a regulating unit.

Also available for showing are other 28-minute sound color films on the Dallas, Detroit, Mud Mountain, and Albeni Falls dams.

Requests for the films should be addressed to the Technical Liaison Branch, North Pacific Division, U. S. Army Corps of Engineers, 210 Custom House, Portland 9, Oreg.



THREE WORKMEN (LEFT) STAND BEHIND FOLDED vinyl-coated nylon fabric and an electrically-driven blower at the Johns-Manville manufacturing plant at Waukegan, Ill. After spreading out the U. S. Rubber Co. Fiberthin fabric (center) and filling it with a large volume of low-pressure air, Johns-Manville had a 40x80-foot Cid Air Structure (right) to use for storing palletized bags of asbestos fiber, stacked several pallets high on a concrete floor. Swinging double doors measuring 6x8 feet permit the passage of fork-lift trucks. Cid-Air structures are available to form weather-proof enclosures with up to 100,000 square feet of floor area. They are held down by either water or sand ballast in a tube along the base. This heavy weight forms an air seal at the base. The blower operates continuously to maintain the internal pressure. Any arrangements of doors and windows can be supplied. For further information write to Cid Air Structures Co., 1510 E. 96th St., Chicago 28, Ill., or use the Request Card at page 18. Circle No. 34.

For Low Cost Bituminous Paving from Superhighways to Driveways . . .

Get all the advantages of Blaw-Knox Bituminous Paving Equipment

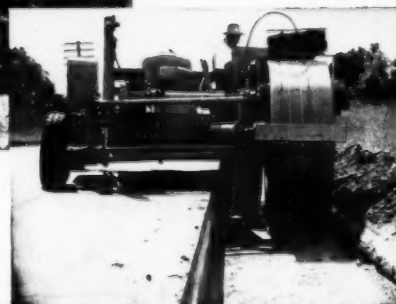
For any type of bituminous paving operation, the efficient production of Blaw-Knox bituminous paving equipment will keep operating costs at a minimum. Where big yardages are involved for superhighways, airports or turnpikes the combination of Blaw-Knox PF-90 Bituminous Paver Finisher laying asphaltic concrete on base course material laid by a Blaw-Knox Base Paver will assure big profitable production. Where the jobs are smaller and working area confined such as driveways, parking lots, alleys, play areas, or streets, the Blaw-Knox PF-45

Black Top Paver will give you the kind of production that will mean money in the pocket. When shoulder paving or road widening are involved the Blaw-Knox Road Widener and Trench Roller team will reduce hand labor, wasted material, form setting and rolling time.

All units in the line of Bituminous paving equipment are engineered to give maximum versatility. They can be adjusted to work in various widths and handle many types of material or mixes. For complete information see your nearest Blaw-Knox distributor.

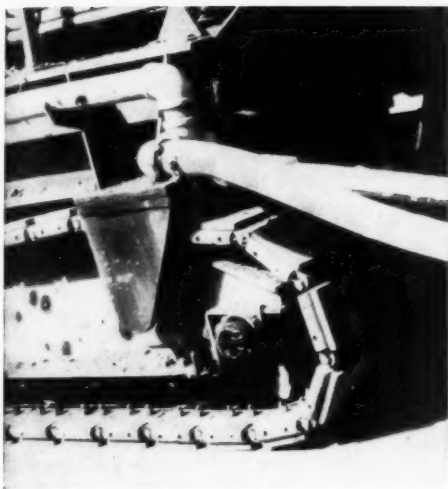


Trench Roller speeds trench compaction in either narrow or wide trenches. Rolling width and depth can be adjusted while roller is in motion.



Road Widener can be used to spread gravel or pave concrete and asphalt on shoulder paving or road widening jobs. They can be adjusted to work from 18" to 10'.

Model R
features
bination
capacity
per shift



Rubber covered crawler pads, product of the MW Protective Coatings Division of Metalweld, Inc., permit the movement of paving machines and other crawler equipment on finished concrete surfaces.

Rubber pads allow travel over finished concrete

■ Rubber-covered crawler pads which permit paving machines to move over finished concrete without damaging the surface are available from the MW Protective Coatings Division of Metalweld, Inc. The pads are made of steel plates $\frac{1}{4}$ inch thick and usually about 8 inches wide x 15 inches long, with a covering of tough, pliable rubber on one side.

The rubber and steel are joined together by the B. F. Goodrich Vulcalock bonding process. The rubber covering may be from $\frac{3}{8}$ to 1 inch thick, depending on the requirements and clearance on the paver. The pads are attached to the crawlers by four

$\frac{1}{2}$ -inch-diameter carriage bolts through holes in the crawler shoes, or through specially-drilled holes.

The pads eliminate the need for placing belting or planks underneath the paving machine or other crawler equipment. They are intended for use only on finished road beds and smooth surfaces. The pads cannot be used where sharp rocks or stones would damage the rubber covering.

For further information write to Metalweld, Inc., MW Protective Coatings Division, Scotts Lane and Abbottsford Ave., Philadelphia 29, Pa., or use the Request Card at page 18. Circle No. 54.



Model PF-90 Bituminous Paver Finisher has high capacity features for big job production. No other paver offers its combination of rubber-tired mounting, paving speed, paving width, capacity and high travel speed — features that mean more tons per shift on day-after-day jobs.



Model P-150 Base Paver spreads big tonnages of base course material without segregation. Its oscillating screed knits fine or coarse material into an even compact base course that is true to grade and crown.



Model PF-45 Black Top Paver assures big profits on small to medium black top paving jobs. Its rubber-tired mounting, capacity, high travel speed and maneuverability save time and hand labor when working in confined areas or on scattered jobs.

For complete information of the complete line of Blaw-Knox bituminous equipment send for the following bulletins — for the Model PF-90 Bituminous Paver Finisher, No. 2475; for the Model P-150 Base Paver, No. 2457R; for the Model PF-45 Black Top Paver, No. 2539; for the Road Widener, No. 2458R and for the Trench Roller, No. 2497.



BLAW-KNOX COMPANY
Construction Equipment Division
40 Charleston Ave., Mattoon, Illinois

For more facts, use Reader-Reply Card opposite page 18 and circle No. 219

U. S. Steel names Aurelius assistant vice president

Marcus J. Aurelius has been appointed assistant executive vice president of the U. S. Steel Corp., New York, N. Y. Aurelius has been succeeded in his former post of vice president of sales by M. M. Chapman.

In 1946, Aurelius became vice president of sales of the U. S. Steel Supply Division in Chicago, and four years later was appointed vice president of sales of the Columbia-Geneva Steel Division. In 1955 he was made vice president and general manager of sales for the corporation.

Chapman has held such posts as manager of the Sheet & Strip Sales Division, assistant general manager of sales distribution, and assistant vice president of sales distribution.

Howard J. Mullin has been named assistant vice president of sales distribution for U. S. Steel. J. M. Curto will succeed Mullin as manager of sales for the New York district sales office.

Mullin, who has been with the company since 1927, recently completed five months' service as executive director of "The President's Citizens Advisers on the Mutual Security Program." Curto, with U. S. Steel since 1937, previously served as assistant manager of sales in the Pittsburgh district sales office.

High bids threaten delay on St. Lawrence Seaway

An official of the St. Lawrence Seaway Development Corporation has announced that bids for the largest single construction project on the Seaway exceeded the engineers' estimate by \$14 million. This could cause both the seaway and the connected power project to be delayed for weeks.

The engineers' estimate on the dredging of the south channel of the Seaway south of Cornwall Island was \$18 million, but the lowest bids received in the month of March amounted to \$32 million. Four solutions to the problem have been offered: turning over the South Channel project to Canadian Ontario Hydro; using equipment of the U. S. Army Corps of Engineers; requesting additional Congressional appropriations; and re-advertising for American bids.



Financing the \$100 billion challenge

by L. MINER DOOLEN, president,
Associated Equipment Distributors

What does \$100 billion in highway construction mean in terms of material and equipment?
The most conservative estimates are

that between \$300 and \$350 million worth of additional new equipment—over and above usual replacements—will be required by the highway program in 1957 alone.

Contractors claim that for each \$1 billion increase in the level of highway construction, 16 million barrels of cement, more than 76 million tons of aggregates, a million tons of bituminous material, more than a half-million tons of structural steel, and 123 million gallons of petroleum products will be needed.

Excluding, for the moment, the engineers, material producers, and state and federal agencies closely identified with the road program, there are four segments of the highway building industry sharing some responsibility for transforming these products into the roads of tomorrow.

The manufacturer of heavy construction machinery, though plagued by high operating costs and tight money, is ready to deliver the need equipment for the job. The equipment distributor is the second member of this team. The contracting firms, which will actually build the roads, also have problems, but they are ready to handle all usual demands for services while taking on the job of building more roads under the national highway program.

The anchor man in this team operation is the lender—who can be a commercial banker, investment banker, or representative of an industrial finance company. These are the men who will have to supply the bulk of the highway program's financing—the lubrication for a \$100 billion machine.

In this chain—manufacturer, distributor, contractor, and lender—the two weakest links are, I feel, the distributor and lender.

Bankers and distributors are in solid agreement on the fact that the highway program is essential to our national well being, militarily and economically. They are ready to assume their respective responsibilities in the highway program. The commercial banks and finance companies have been the major participants in equipment financing over the years. They have been front-row observers of the equipment distributors' continuing program to improve operating standards and eliminate undesirable elements and outmoded techniques.

Misunderstandings

But while most of the big metropolitan banks and finance companies know the score on equipment financing, the story is entirely different for the smaller city banks.

There are some distributors who will not go near their local banks for equipment financing because they got rough receptions there in the twenties and thirties. And there are bankers who will lend a distributor all the money he wants for a house, a car, or some other item, but who will not touch a dealer's equipment because of some bad experiences during the roadbuilding industry's lusty infancy.

Yet today's highway contractor and his equipment distributor are men of standing in both their communities

ONE-TWO PUNCH for Rocky Roadwork



1 **GYRO-FLO
COMPRESSOR** and



2 **FM-4 WAGON DRILLS**
cut road-building costs three ways

Here's a high-powered rock-drilling combination that can really set the pace for both speed and economy in modern road work. The proved dependability and smooth, trouble-free performance of the Gyro-Flo rotary compressor keeps it on the job, with virtually no down-time for attention or servicing.

The versatility and easy mobility of the Ingersoll-Rand FM-4 Wagon Drills means fast, easy setups on any type of ground. Their tremendous striking power, positive rotation and exceptional hole-cleaning ability add up to maximum drilling speed, even in the hardest rock.

And, used with long-lasting, fast-drilling Ingersoll-Rand Carset Jackbits, this combination

has no equal for sustained high production at lowest overall cost per foot of hole or per mile of highway construction.

Whether you need one, two, or three of these heavy-duty FM-4s, there's a Gyro-Flo compressor of ample capacity for the job—a 315, 600 or 900 cfm. The Gyro-Flo line also includes three other sizes, down to 85 cfm, for operating smaller air tools. Ask your I-R representative for complete information on this cost-cutting Contractors' Combination.

Ingersoll-Rand
11 Broadway, New York 4, N. Y.

**CONTRACTORS'
COMBINATION**

THE BEST AIR EQUIPMENT
for BETTER HIGHWAYS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 220

2-503

and in their industries. Last year, 7 out of 14 manufacturing lines and 11 out of 23 retail outlets had higher rates of failure than highway contractors.

This point is important, because business mortalities among contractors are often cited as a major deterrent in the financing of construction machinery. As for the actual failures, exactly 33 of the 1,834 construction failures reported in 1956 occurred among highway contractors. This is less than 2 per cent of the total. The rate of failures among highway contractors, for the most recent 12-month period available, is 25 per cent below that of all manufacturing.

Right now, AED is striving for increasingly closer contact with bankers all over the country. We know, from our surveys and conversations, a number of bankers still feel that some operating procedures of dealers and contractors do not quite measure up to orthodox standards of credit evaluation.

Bankers' criticisms

Some of the more frequently heard criticisms of bankers are that "distributors try to take every deal that comes along." Some bankers say that many dealers are "virtually in competition with bankers", and that sense cannot be made out of the financial statements of contractors. Or bankers may ask: "Is it sound business to extend time payments on road machinery over as long as a period as five years? We banks don't want to get into the used equipment business. How would we go about repossessing a power crane or bulldozer?"

Dealers' answers

Here is a partial, over-all answer to these questions: Dealers have learned, the hard way, that volume for volume's sake, with little or no regard for quality, is a short cut to disaster. Today's dealer works with standard operating procedures. The dealer has learned that he has to know where he stands so that the information can be given to the banker who is to underwrite credit requirements.

AED believes—and so tells its members—that equipment financing terms must be based on the traditional sound financing standards, with due regard for the purchaser's credit standing, the nature of his operations, and local bank policy. AED stresses that there is no fixed financing package to fit all deals and dealers.

But if distributors start talking to bankers in terms of years instead of months, bankers will have to remember that the distributors are dealing in income producing equipment that, with proper maintenance, has a productive life expectancy of five to ten years or more. And such equipment generally has a high resale value.

Should bankers have to repossess a piece of equipment, they will not find themselves in the used equipment business, for the very good reason that dealers do not want bankers there. Distributors have a tough enough time keeping up with their competition. A big part of the dealer's job will be to help bankers get rid of

the repossession, and dealers are ready and equipped to do just that.

AED financing committee

AED now boasts a new committee on equipment financing. The formation of this group is a direct reflection of the need for broader education of the banking fraternity generally, as to distributor problems and objectives. With equal force, it will strive to help distributors to a better understanding and appreciation of banking's problems and policies.

What is needed today is more light

on a complex series of relationships, greater mutual understanding of banking, and an effort on the part of all concerned to eliminate admitted shortcomings and to concentrate on the mutually profitable goals that lie ahead.

We know, through bitter experience, that when banking and industry fail to take the initiative in the solution of their mutual problems, that there are politicians ready and—unfortunately—frequently able to create still another federal lending agency.

There is no room, no need for such

an agency in the national highway program. I feel confident I speak for bankers, distributors, manufacturers, and contractors when I say that we do not want a government lending agency in our business.

We do not have to have it there if everyone works together, through their associations and as individuals, to meet the challenge of carrying out a \$100 billion highway program.

THE END

(From a speech by L. Miner Doolen before the National Installment Credit Conference of the American Bankers Association in Chicago, Ill.)

Report from Texas contractor on the NEW CAT* No. 955 TRAXCAVATOR



**"We really like it.
It does a heap of
work well on
many different
types of jobs."**

**Jack Crea, Crea Bros.,
San Antonio, Texas**

Twenty miles west of Austin, Crea Bros. are rebuilding 7 miles of farm-to-market road. Among the firm's Caterpillar equipment, there's this new 70 HP No. 955 Traxcavator* with 1½-yard bucket. Handling rock, gravel and cement, it's tearing out an old culvert for replacement to widen the road. Because of its versatility, it's kept busy 10 hours a day, 6 days a week, on many different types of jobs from excavating to loading.

The new No. 955 is proving a highly productive machine on operations all over the country. Here are some reasons why:

1. **40° bucket tilt-back at ground level** assures large loads every pass.
2. **Perfect balance of weight, power and capacity** keeps the full length of the track on the ground even with a heaped load.
3. **New oil-type clutch** cuts costs two ways. Clutch adjustment, while easy, is seldom required. Plate replacement is often unnecessary even at engine overhaul.
4. **Modern hydraulic system** insures delivery of full volume and pressure of oil for thousands of hours. Filter located for easy replacement of element.

5. **Pilot-house visibility** provides excellent view of all bucket positions. All controls in easy reach—bucket control a one-hand operation.

6. **Plenty of power** to "bury" the bucket also provides fast lifting and positive dumping under all load conditions.

7. **In-the-seat starting** with choice of 6-volt electric starting for starting engine or 24-volt direct electric starting.

Your Caterpillar Dealer is a source of fast, dependable service and reliable information. See him for complete facts about the new No. 955!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar, Cat and Traxcavator are Registered Trademarks

**USE CAT EQUIPMENT
FOR HIGH-PROFIT
PRODUCTION**

For more facts, use Reader-Reply Card opposite page 18 and circle No. 221



Workmen set Uni-Form panels for a pile cap, which will contain 22 piles. The cap, measuring 13 feet 2 inches x 18 feet, is 4 feet 7 inches deep. Piles in front of the cap are for the press row foundation.



A Mack B-42 truck dumps gravel at the job site for use as base course for the 8-inch reinforced-concrete floor slab.

The Evening Star Newspaper Co. in Washington, D. C., is getting a new home. Chas. H. Tompkins Co., general contracting firm with headquarters in the nation's capital, is building a 7-story \$8,000,000 concrete and steel structure for the afternoon and Sunday newspaper.

The Star, at present, is located at 11th St. and Pennsylvania Ave., NW,

in the heart of the business section. Obviously, this location has long presented a problem with modern-day heavy traffic. Large trucks must deliver huge rolls of newsprint, and smaller delivery trucks encounter traffic jams in picking up bundles of copies as the editions roll off the press.

The new plant going up will occupy

nearly an entire block in the less congested southeast section, and yet is within a half-dozen blocks of the U. S. Capitol. The ground area, in excess of 70,000 square feet, is bounded on the north by Virginia Ave.; on the south by Eye St.; and on the west by Second St., Dimensions of the structure along Virginia, Second, and Eye Streets are respec-

Steel forms interchanged for p

B.F. Goodrich on-the-job

Saves you costly down-time

We service any tire, any job, anywhere!

CALL us the next time you need quick on-the-job tire service. Our B.F. Goodrich Tire Service Men are trained to handle any tire size or type on any kind of job. B.F. Goodrich Servicemobiles are equipped with hydraulic cranes, power wrench, tube repair vulcanizers, a heavy duty jack and all other equipment needed for tire service work on the job. Save the expense of work-stopping down-time and get longer tire life. Call us for on-the-job tire service!





FREE!

money-saving services

Without cost or obligation we will:

- Inspect all your tires.
- Point out tires that should be repaired or replaced.
- Select tires for retreading by factory-tested and proved B.F. Goodrich methods.
- Set up a proper inflation program.
- Start you on a program of regular tire rotation and inspection.



See us for B.F. Goodrich off-the-road tires and service or check Yellow Pages of phone book for more complete listing in your area

Specify B.F. Goodrich tires when ordering new equipment

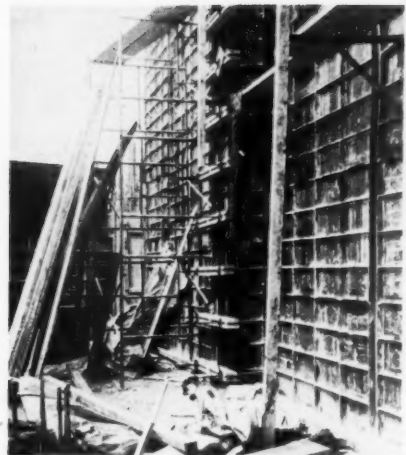
CONTRACTORS AND ENGINEERS

Underpinning was required at the rear of the buildings remaining on Third Street.

WILLIAM H. QUIRK,
editor



The 20-foot-high foundation wall is formed with Uni-Form panels. Forms were erected from Concrete Forms Corp. scaffolding.



ed for pile caps and walls

tively 318, 336, and 214 feet, with the main entrance on Virginia.

A siding of the Pennsylvania Railroad will enter the new plant, and newsprint will be delivered direct to the reel room and storage area. The press room will be equipped with 42 press units and 6 folders, with provision for 100 per cent expansion. A covered circulation truck loading area

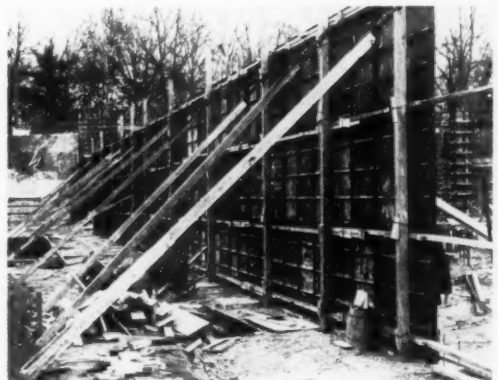
affords space for 23 delivery trucks.

Started last fall

After the site was acquired and cleared by the owner, Chas. H. Tompkins Co. moved in and began foundation excavation last September. About 70,000 yards of material—clay, river silt, sand, and boulders—was dug out

(Continued on next page)

In forming the interior wall, wales and bracing were needed on only one side of the panels. The 4 X 4 shoring has Concrete Forms Corp. alignment screws on top to plumb the sections.



ptire service

ALABAMA
MINISTON—B. F. Goodrich Store
BIRMINGHAM—B. F. Goodrich Store
DECATUR—B. F. Goodrich Store
MOBILE—B. F. Goodrich Store
PONTIAC—B. F. Goodrich Store
TUSCALOOSA—B. F. Goodrich Store
ADams 5-2571
4-0361
6-49
6-5271
2-2681
2-1661
Trinity 4-8254
Plaza 8-9312

ARIZONA
PHOENIX—B. F. Goodrich Store
Tucson—B. F. Goodrich Store
Yuma—Canner Tire Company
Alpine 3-6168
Main 3-3881
Sunset 2-2547

ARKANSAS
LITTLE ROCK—B. F. Goodrich Store
FARGO—B. F. Goodrich Store
JACKSONVILLE—B. F. Goodrich Store
MEMPHIS—B. F. Goodrich Store
NATIONAL CITY—B. F. Goodrich Store
PITTSBURGH—B. F. Goodrich Store
SPRINGFIELD—B. F. Goodrich Store
WHEELING—B. F. Goodrich Store
JEfferson 4-5123

CALIFORNIA
SACRAMENTO—B. F. Goodrich Store
STOCKTON—B. F. Goodrich Store
VALLEJO—B. F. Goodrich Store
FAIRVIEW 4-7071
Ludlow 8-5165
Ludlow 7-3789
Hillside 2-5700
Adams 3-5216
Ludlow 7-2241
Richmond 4-6171
Lambert 2-1005
Highgate 4-2800
Gilbert 2-3811
Belmont 2-3131
Underhill 1-1801
State 6-8762

COLORADO
COLORADO SPRINGS—B. F. Goodrich Store
DENVER—B. F. Goodrich Store
FORT COLLINS—B. F. Goodrich Store
PUEBLO—B. F. Goodrich Store
STERLING—B. F. Goodrich Store
JACKSON 7-2121
Locus 5106
Turner 7-8051

CONNECTICUT
HARTFORD—B. F. Goodrich Store
NEW HAVEN—B. F. Goodrich Store
MIDDLETOWN—B. F. Goodrich Store
JACKSON 7-2121
Locus 5106
Turner 7-8051

DELAWARE
REARFORD—B. F. Goodrich Store
4504

DISTRICT OF COLUMBIA
WASHINGTON—B. F. Goodrich Store
Republic 7-5525

FLORIDA
FT. LAUDERDALE—B. F. Goodrich Store
JACKSONVILLE—B. F. Goodrich Store
MIAMI—B. F. Goodrich Store
ORLANDO—B. F. Goodrich Store
PENSACOLA—B. F. Goodrich Store
TAMPA—B. F. Goodrich Store
W. PALM BEACH—B. F. Goodrich Store
JACKSON 4-6862
Elgin 4-2801
MUTual 2-0331
Franklin 3-2113
Marion 2-4254
2-3161
Hemlock 8-3181
4-0181
Temple 2-4181

GEORGIA
ATLANTA—B. F. Goodrich Store
AUGUSTA—B. F. Goodrich Store
COLUMBUS—B. F. Goodrich Store
Hemlock 2-6491
JACKSON 2-5035
4-5581
FAIRfax 2-3581

IDAHO
BOISE—Hill's
IDAHO FALLS—Yellowstone Tire Co.
JACKSON 3-3421
JACKSON 7-7131

ILLINOIS
ALTON—B. F. Goodrich Store
AURORA—B. F. Goodrich Store
CHICAGO—Consumers Tire & Supply Co., Inc.
CHICAGO HTS.—B. F. Goodrich Store
DECATUR—B. F. Goodrich Store
GALESBURG—Quint's Service
JACKSONVILLE—B. F. Goodrich Store
LA SALLE—Tom's Tire Shop
MOUNT VERNON—Ranney's Standard Tire Co.
OAK PARK—B. F. Goodrich Store
PEORIA—B. F. Goodrich Store
QUINCY—B. F. Goodrich Store
ROCK ISLAND—B. F. Goodrich Store
SPRINGFIELD—B. F. Goodrich Store
VANDALIA—B. F. Goodrich Store
WEST PLANO—Lucas DX Tire Service
3-7754
7-4848
Haymarket 1-7513 & 1-7514
SKYline 5-2532
5258
4961
CHEstnut 5-6194
831
60
EUclid 3-4900
2137
4-4181
BALdwin 2-4800
8-5374
3-3813
8121

INDIANA
EVANSVILLE—B. F. Goodrich Store
FT. WAYNE—B. F. Goodrich Store
INDIANAPOLIS—B. F. Goodrich Store
MARIION—B. F. Goodrich Store
MUNCIE—B. F. Goodrich Store
RICHMOND—B. F. Goodrich Store
VINCENNES—B. F. Goodrich Store
HARRISON 5-2408
ANTHony 9166
MEIrose 5-3407
2504
ATlas 8-3937
2-2395
616

IOWA
CEDAR RAPIDS—B. F. Goodrich Store
DAVENPORT—B. F. Goodrich Store
DES MOINES—B. F. Goodrich Store
WATERLOO—B. F. Goodrich Store
EMPIre 4-5165
2-2685
CHerry 4-7278
ADams 4-4649

KANSAS
KANSAS CITY—B. F. Goodrich Store
WICHITA—B. F. Goodrich Store
MAYfair 1-1205
FOREst 3-1254

KENTUCKY
BOWLING GREEN—B. F. Goodrich Store
LEXINGTON—B. F. Goodrich Store
LOUISVILLE—B. F. Goodrich Store
MAYFIELD—B. F. Goodrich Store
PADUCAH—B. F. Goodrich Store
VICTory 2-4808
2-4877
54
5-5454

LOUISIANA
BATON ROUGE—B. F. Goodrich Store
MONROE—B. F. Goodrich Store
NEW ORLEANS—B. F. Goodrich Store
2-6895
3-0386
CANal 0191

MAINE
LEWISTON—B. F. Goodrich Store
2-9851

MARYLAND
BALTIMORE—B. F. Goodrich Store
HAGERSTOWN—B. F. Goodrich Store
SALISBURY—B. F. Goodrich Store
BELmont 5-9054
REGent 4-4760
Pioneer 2-2172

MASSACHUSETTS
BOSTON—Merchants Distributors, Inc.
BROCKTON—B. F. Goodrich Store
LYNN—B. F. Goodrich Store
NEW BEDFORD—B. F. Goodrich Store
NORTH ADAMS—B. F. Goodrich Store
SPRINGFIELD—B. F. Goodrich Store
W. SOMERVILLE—B. F. Goodrich Store
WORCESTER—B. F. Goodrich Store
KENmore 6-4780
100
2-0275
2-0275
MOhawk 3-6849
REpublic 3-6868
PLeasant 5-4397

MICHIGAN
DEARBORN—B. F. Goodrich Store
DETROIT—B. F. Goodrich Store
FLINT—B. F. Goodrich Store
GRAND RAPIDS—B. F. Goodrich Store
KALAMAZOO—B. F. Goodrich Store
LANSING—B. F. Goodrich Store
PONTIAC—B. F. Goodrich Store
SAGINAW—B. F. Goodrich Store
Luzon 1-6900
FOREst 6-4900
CEDar 2-0169
GLendale 9-3444
Firestone 2-2544
IVanhoe 2-0621
FEDeral 2-0121
PLeasant 2-4101

MINNESOTA
AUSTIN—B. F. Goodrich Store
DULUTH—B. F. Goodrich Store
MINNEAPOLIS—B. F. Goodrich Store
ST. PAUL—B. F. Goodrich Store
HEmlock 7-3834
RAndolph 4-8505
FR 5-1195
Capitol 2-3617

MISSISSIPPI
COLUMBUS—B. F. Goodrich Store
CORINTH—B. F. Goodrich Store
GREENVILLE—Bryan Wilson Tire Co.
GREENWOOD—B. F. Goodrich Store
JACKSON—B. F. Goodrich Store
MERIDIAN—B. F. Goodrich Store
NATCHEZ—B. F. Goodrich Store
YAZOO CITY—B. F. Goodrich Store
FAIRfax 8-7150
6628
2-1543
70
2-0846
2-3128
2-1651
2164

MISSOURI
CARUTHERSVILLE—B. F. Goodrich Store
HANNIBAL—B. F. Goodrich Store
JOPLIN—B. F. Goodrich Store
KANSAS CITY—B. F. Goodrich Store
KANSAS CITY—Missouri Valley Tire Co.
MEXICO—B. F. Goodrich Store
POPLAR BLUFF—J. A. Parker Tire Co.
ST. CHARLES—B. F. Goodrich Store
ST. LOUIS—B. F. Goodrich Store
SPRINGFIELD—B. F. Goodrich Store
15
138
MAYfair 4-4141
Valentine 2-4777
BALtimore 1-1184
3040
SUNset 5-3938
RAndolph 4-3648
FOREst 7-8300
4-2861

NEBRASKA
OMAHA—B. F. Goodrich Store
JACKSON 4024

NEW JERSEY
NEWARK—B. F. Goodrich Store
PATerson—Dave Stern, Inc.
PERTH AMBOY—Jersey Tire Co.
MARKet 3-4346
ARMory 4-6033
VALley 6-2300

NEW MEXICO
ALBUQUERQUE—B. F. Goodrich Store
CARLSBAD—B. F. Goodrich Store
GALLUP—B. F. Goodrich Store
SANTE FE—B. F. Goodrich Store
3-5587
3-3141
3-6385

NEW YORK
ALBANY—B. F. Goodrich Store
BRONX—B. F. Goodrich Store
LONG ISLAND CITY—B. F. Goodrich Store
MASSA—B. F. Goodrich Store
NEW YORK—B. F. Goodrich Store
POUGHKEEPSIE—B. F. Goodrich Store
SCHENECTADY—B. F. Goodrich Store
SYRACUSE—B. F. Goodrich Store
UTICA—B. F. Goodrich Store
4-8115
CYpress 5-3622
ASToria 8-6568
ROCKwell 9-3541
ENdlicott 2-0900
GLOBE 2-8030
DICKens 6-4282
74-5351
3-7636

NORTH CAROLINA
ASHEVILLE—B. F. Goodrich Store
CHARLOTTE—B. F. Goodrich Store
DURHAM—Nu-Tread Tire Co.
FAYETTEVILLE—B. F. Goodrich Store
GREENSBORO—B. F. Goodrich Store
RALEIGH—B. F. Goodrich Store
3-2726
EDison 3-4134
9-2087
2-2458
2-3197
3-3831

OHIO
CINCINNATI—B. F. Goodrich Store
CLEVELAND—B. F. Goodrich Store
ELYRIA—B. F. Goodrich Store
HAMILTON—B. F. Goodrich Store
MANSFIELD—B. F. Goodrich Store
MAHON—B. F. Goodrich Store
TOLEDO—B. F. Goodrich Store
WOOSTER—Strook's Tire Company
CHerry 1-4050
PROspect 1-2650
2552 or 2955
TWINbrook 3-4711
4500-6
FRontier 3-2096
CHerry 3-1258
HOWard 2-8906

OKLAHOMA
MIAMI—Miami Sales Company
OKLAHOMA CITY—B. F. Goodrich Store
TULSA—B. F. Goodrich Store
TULSA—Tom P. McDermott, Inc.
KIMball 2-2880
FORest 5-1347
LUTher 5-1221
DIAMond 3-9188

OREGON
EUGENE—B. F. Goodrich Store
DIAMond 5-6141

PORTLAND—Mel Goodin Tire Co.
PORTLAND—B. F. Goodrich Store
SALEM—Russell's Tire Service
BELmont 5-4127
BELmont 6-2108
EMpire 2-5651

PENNSYLVANIA
CLEARFIELD—J. B. Beard
ERIE—B. F. Goodrich Store
HARRISBURG—B. F. Goodrich Store
HOMETOWN—Schultz
JOHNSTOWN—McNally Tire & Rubber Co.
LANCASTER—B. F. Goodrich Store
PITTSBURGH—B. F. Goodrich Store
READING—B. F. Goodrich Store
SCRANTON—Kelly Smeritz
TURTLE CREEK—B. F. Goodrich Store
WILKES-BARRE—Economy Gas & Oil
YORK—L. J. Allen
5-9844
2-3205
4-6296
TAMaqua 2300
4-4321
EXpress 2-2198
MUSEum 2-8310
4-2274
DIAMond 3-3925
VA 3-2110
VALley 3-0189
5728

RHODE ISLAND
PROVIDENCE—B. F. Goodrich Store
DEXter 1-9800

SOUTH CAROLINA
CHARLESTON—B. F. Goodrich Store
COLUMBIA—B. F. Goodrich Store
FLORENCE—B. F. Goodrich Store
GREENVILLE—Tires, Inc.
SPARTANBURG—B. F. Goodrich Store
2-8391
4-8135
4-319
5-9657
5491

SOUTH DAKOTA
SIOUX FALLS—B. F. Goodrich Store
4-9979

TENNESSEE
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ALPine 5-6353

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BRYAN—Brazer Tire Service
CORPUS CHRISTI—B. F. Goodrich Store
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ODESSA—Odessa Tire & Supply, Inc.
SAN ANTONIO—B. F. Goodrich Store
TAYlor 3-3078
TULIP 5-3641
Riverside 1-1201
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UTAH
PROVO—B. F. Goodrich Store
SALT LAKE CITY—Frank Ford's Transport Tire Service
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445

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MOSES LAKE—O. K. Rubber Welders
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276
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ELLIott 6666
MAIN 5271
MAIN 9173

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CLARKSBURG—B. F. Goodrich Store
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MAIN 4-7681
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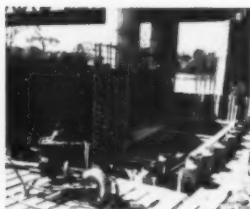


An Allis-Chalmers HD-5 with Tracto-Shovel grades the site before an 8-inch layer of bank-run gravel is put down over the entire building area.

IS YOUR JOB HERE— USING STEEL-SHEET PILING?

All these jobs moved on schedule, with no delays,
no capital tie-up, no substitute lengths or sections.

They all used the **"FOSTER PILING RENTAL PLAN"**



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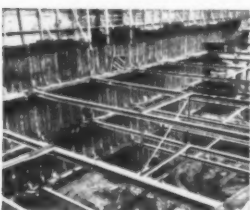
Boston & Maine Railroad
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C. J. Maney Construction Co.



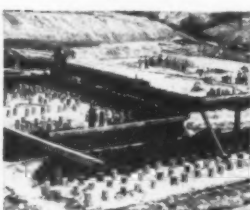
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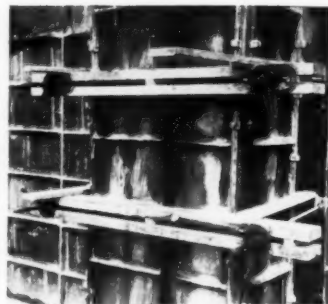
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For more facts, use Reader-Reply Card opposite page 18 and circle No. 223

(Continued from preceding page)

by a power shovel, and hauled away. The site is about a half-mile from the Anacostia River which accounts for the densely packed river silt. Boulders were generally found in the top 10 feet of excavation. Eye St., on the south, is 10 feet lower than Virginia Ave. on the north side, so the depth of excavation varied. Foundation walls along the north side of the building are 25 feet high.

Underpinning, which was performed by Coakley & Booth of New York City, was required at the rear of the buildings remaining on Third St. Concrete piers were poured 5 feet wide and 5 feet apart, with timber lagging between the piers. A steel wale was placed near the top of the piers, and this was shored with 12x12 rakers braced against the pile caps.



A 32-inch column, formed with Universal Uni-Form panels, is held in position with Spiroloc assemblies. Double 2x6 wales on 2-foot centers were used with the exterior column forms.

With these buildings secure, the contractor began working on the foundation of the new plant. Raymond Concrete Pile Co. moved in on the job October 15 with two driving rigs—one on crawlers, and the other on skids—and began driving step tapered steel piles with pipe points. The last of the 3,452 piles, totalling 110,000 linear feet, was driven on March 5; for most of the driving period, the subcontractor worked two shifts. Piles averaged 33 feet in length with an average 12-inch diameter. Because of the tightly compacted upper strata of ground, the top 10 feet was pre-excavated with an auger. Steel pipe, 10 3/4 inches in diameter with closed end, was used as a pile point to give end bearing, in addition to side friction. The rigs drove the piles to 50-ton bearing with 6,500-pound hammers.

Variety of pile caps

Piles were driven in clusters of various numbers according to the column loads, with an average of about 20 piles to a cluster, and a maximum of 54 piles in one group. They were filled with concrete. The caps have a great variety of shapes, and range in depth from 2 feet 5 inches to 4 feet 11 inches with the piles being embedded 4 inches into the caps.

Forms for the pile caps and foundation walls consisted of Universal Uni-Form panels in 12, 18, and 24-inch widths, and in lengths of 3, 4, and 6 feet. A total of 12,000 square feet of these forms was acquired for the job. These easily assembled and

CONTRACTORS AND ENGINEERS

An engineer from the contractor's survey crew sets column control centers with a K&E transit.



dismantled forms were particularly effective in this cap work where only 7 out of 175 caps had the same dimensions.

Approximately 6,000 yards of concrete was needed in pouring the caps, with the largest taking 75 yards. Concrete for the project was supplied by truck mixers. Bethlehem Steel Co. is furnishing the reinforcing steel for the project.

Foundation walls

Pile driving and capping was progressing when work on the foundation walls got underway February 7. These walls are 12 or 14 inches thick. One other major wall is an 8-inch interior wall 26 feet high, running the length of the basement and separating the press reel room from the newsprint storage area. The two press rows are 247 feet long, with concrete foundations 3 feet 4 inches deep x 11 feet wide that are isolated from the rest of the structure to eliminate vibration in the building.

The same Uni-Forms used on the caps were erected for the wall forms. Sets of Concrete Form Corp. scaffolds were set up from which the forms were erected and later stripped after the pours were made. When required by winter weather, the forms were covered with tarpaulins and heat was provided by small propane gas heaters.

Uni-Forms were employed also for the wall columns that are generally 28-inch to 32-inch square. Universal Spiroloc assemblies held in position the exterior column forms that are set in 4½ inches at the basement level. They were used with double 2x6 wales on 2-foot centers.

In forming the long interior wall, wales and bracing were needed only on one side. The shoring consisted of 4x4's with Concrete Forms Corp. alignment screws on top to keep the panel sections plumb.

A rush job

Press equipment, of course, was acquired under separate contract, but the owner wished to get started on their assemblage as quickly as possible. The general contractor, accordingly, is rushing with all possible speed to complete the press area and cover it over at the third floor level. Thus, work on the presses themselves can proceed while the rest of the

building is going up. When the newspaper plant is completed according to present plans, the presses should also be ready to roll.

The press section of the building has a structural steel frame, while the remainder is of reinforced concrete. Bethlehem Steel Co. is supplying the necessary 1,700 tons from its Pottstown, Pa., plant, and doing its own erection. First steel was scheduled to go up April 1. Girders 62 feet long x 8 feet deep, and weighing 27 tons will span the loading area.

An 8-inch layer of gravel will be laid over the entire building area as a base for the 8-inch reinforced concrete floor slab. The structure will be enclosed with either brick walls or precast panels; alternate bids will be taken on both designs.

Personnel

Chas. H. Tompkins Co., the general contractor, is represented on the project by John D. Muncks, project engineer, and Bruce Hutsler, superintendent, with J. Slater Davidson, Jr., vice president, in over-all charge of construction.

Faulkner, Kingsbury & Stenhouse of Washington, D. C., is the architect for the Evening Star Building. James M. Gongwer of Washington, D. C. is the consulting structural engineer, and C. S. Leopold of Philadelphia, Pa., is the consulting mechanical engineer.

Mr. Charles Welch, assistant business manager of the Evening Star, is in charge of design and construction for the owner.

THE END

THOR PAVING BREAKERS

*Available in
30, 60, 70, 80-lb.
classes*



Thor model 25 paving breakers working in tandem, speed street demolition. Easy-operating latch retainer encourages operators to use sharp steels.



THOR MUFFLES BREAKER NOISE

Now it's easy to cut down paving breaker noise in quiet zones or inside buildings by covering breakers with Thor's exclusive muffle cover. Cuts noise, reduces operator fatigue.

Your men will complete more work with less fatigue when they use Thor Paving Breakers, because Thor's smooth performance prevents power overloads which stagger the stroke and cause vibration. Thor's exclusive tubular air valve admits only the exact amount of air required for each stroke, assuring balanced power, maximum air economy and low maintenance costs. Ask your Thor distributor for a demonstration. Thor Power Tool Company, Prudential Plaza, Chicago 1, Illinois.



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For more facts, use Reader-Reply Card opposite page 18 and circle No. 224

Channel relocation, widening, creates big earthmoving job

Moving over 3,000 yards of channel excavation and about 1,600 yards of borrow every 10-hour day was the pace kept up by B. E. Reichenbach, Inc., Selinsgrove, Pa., during its share of work on the \$12 million Anacostia River Basin Flood Control and Navigation project.

Located in the District of Columbia and neighboring Maryland, the U. S. Army Corps of Engineers project involves construction of 14,400 feet of channel relocations and 28,100 feet of earth levees, together with such miscellaneous construction as relocating highway and railroad bridges. Reichenbach's grading subcontract covered relocation of 4,400 feet of channel and 9,300 feet of protective levees.

All this work is being done along the upper sections of the Anacostia River and along its northeast and northwest branches, which join at Bladensburg, Md. The main navigation feature will restore navigation for small craft from the present head of the river, in the District of Columbia, to Bladensburg. Here, a boat basin will be dredged to handle commercial and recreational traffic.

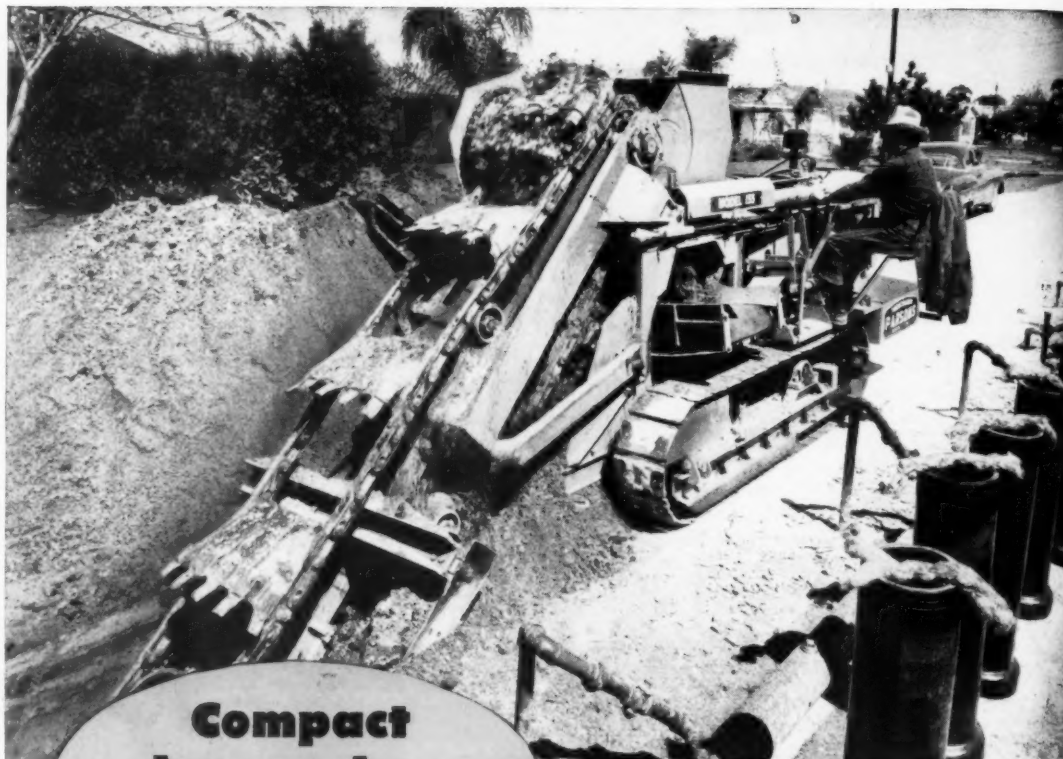
The flood control phase of the Corps of Engineers program consists of a system of levees protecting such urban centers of population as Bladensburg, Edmonston, Riverdale, Hyattsville, Brentwood, Cottage City, and Colmar Manor—all of them in Prince Georges County, Md.

Cranes share work

Excavation for the 4,400-foot section of the channel relocation was started at the beginning of last year by Reichenbach under a \$300,000 grading subcontract. The general contractor, Buck & Donahue, Inc., Newark, N. J., built the three pump stations that will handle rain water runoff and permit any excess water to be pumped outside the protective levees into the new channel.

Reichenbach moved in two Lorain 820 shovels—one equipped with a 2-yard bucket to remove the top 4 to 5 feet of the channel excavation and the other, with a 2½-yard Hendrix perforated dragline bucket on a 50-foot boom, to carry excavation to a depth of about 10 feet.

The bottom of the channel was cut to a grade elevation of minus 1 to



**Compact
low and
narrow**

155 Trenchliner® digs 10 FEET DEEP

Look at the low profile of this small 155 Parsons Trenchliner! Working height is only 7 feet-4 inches. This lets it dig under trees, overhanging branches and other overhead obstructions where larger trenchers can't go. Width over crawlers is only 5 feet-4 inches for work and travel between buildings, in narrow alleys, and other restricted operating areas. Close side-clearance puts trench within 21 inches of walls, poles, fences. Spoil conveyor dodges side obstructions without swerving from grade-line — shifts through machine by power in less than 1 minute. Belt direction is instantly reversible, places spoil bank on either side of trench.

For all its compactness, this utility-size 155 offers a big "plus" in work capacity. It digs 16 to 26 inches wide — 10 feet deep. You get 30 digging speeds (60 optional) from

5.8 inches up to 25 lineal feet per minute. Low range lets the 155 "inch" its way past cross-pipes, through rock and other underground obstructions. High range gives maximum feet per minute on cross-country trenching.

Sloping ladder-boom undercuts walks, curbs, gutters, makes vertical set-ins flush with main lines or foundation walls. Positive down-crowd with hydraulic control starts cut fast, maintains accurate grade. In fact, this 155 has all the heavy-duty characteristics of larger Parsons Trenchliners. It has cast-steel buckets, "Tap-In" teeth, spring-cushioned bucket-cleaner, enclosed gearing, tractor-type crawlers with 16-inch grouser treads or 12-inch flat shoes, choice of gas or diesel power. Have your Parsons distributor demonstrate what this new 155 Trenchliner can do for you — call him today.

Want more facts? Send for ☐ spec. sheet ☐ bulletin on 155 Trenchliner

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CONTRACTORS AND ENGINEERS

Two Lorain shovels team for the more than 227,000 yards of excavation for the 4,400-foot channel location. The Lorain dumping to a Mack truck with 3-yard bucket removes the top 4 to 5 feet of material. Excavation to the remaining 10-foot depth is done by the Lorain with the Hendrix 2-yard perforated dragline bucket. It loads a Euclid bottom-dump.

Flood control, navigation job to reopen upper section of Anacostia River; program includes 28,100 feet of levees, highway and bridge relocations

Both the grading contractor, B. E. Reichenbach, Inc., Selinsgrove, Pa., and the general contractor, Buck & Donahue, Inc., Newark, N. J., maintain their offices in these L. B. Smith office trailers at the job site.



MOBILE 88

Parsons rubber-tired 88 Trenchmobile® drives job to job under its own power at 12.6 m.p.h. — maintains fast schedules. Digs 14½ feet of trench per minute, 8 to 16 inches wide; depths to 5 feet.



Heavy-duty 250

This general-purpose 250 Trenchliner produces up to 9¼ lineal feet of clean-cut trench per minute. Widths, 16 to 42 inches. Depths to 12½ feet. Discharges well beyond edge of trench, or loads trucks.



BIG 310

Equipped with single digging boom, Parsons 310 Trenchliner excavates 17 feet deep, 1½ to 4½ feet wide. With dual booms, it digs 6 feet wide, 12 feet deep — speeds installation of largest sewers, mains, transmission systems, footings. Parsons wheel-types also available, including "big-inch" and "middle-inch" Trenchliners.

Get 3-tool versatility with Kwik-Mix Moto-Bug®

Big R-15 Moto-Bug hauls all kinds of bulk materials in 15 or 18-cubic foot hopper body. Hopper is quickly interchanged with 1-ton capacity platform, or ¾-ton (7-foot) fork lift. There's no limit to its usefulness — earns big savings in time and costs. Ask, too, about smaller S-10 Moto-Bug, available with multiple attachments. Kwik-Mix line also includes concrete mixers, plaster-mortar mixers, bituminous mixers — all sizes and types.

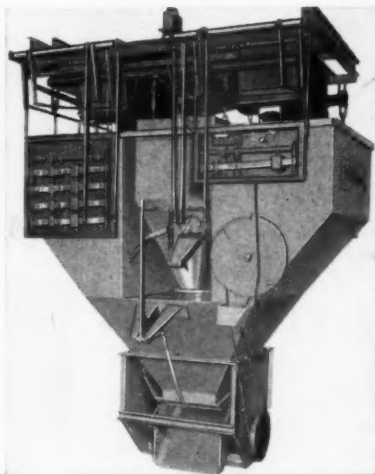
KWIK-MIX • Port Washington, Wis. (Koehring Subsidiary)



Central cement feed prevents "gumming"

With concentric arrangement of aggregates around cement in the Johnson Concentric Batchers, all ingredients are intermingled as they flow through discharge. Reduces dusting, pre-shrinks materials. Cement is weighed individually on precision-beam scale; aggregates on accumulative dial scale or individual beam scales. Johnson Concentric Batchers sizes: 2 to 8 cu. yds., arranged for 2 to 8 aggregates, 1 to 4 types of cement.

C. S. JOHNSON • Champaign, Ill. (Koehring Subsidiary)



Compare Koehring 205 with any other ½-yard

Crowd, swing, boom-hoist and retract clutches on Koehring heavy-duty 205 are among the largest used in the ½-yard class. Powerful cable crowd and electric push-button dipper trip maintain fast dig-and-dump cycles. Automatic traction brakes simplify operation, lock and hold the 205 when working or parked. Work capacity: ½-yd. shovel or hoe; ½ to ¾-yd. clamshell or dragline; 10-ton lift crane on crawlers; 15-ton truck crane.

KOEHRING Company Milwaukee 16, Wis.



2½ feet below mean sea level. This excavation, which amounted to over 227,400 cubic yards, was loaded into a fleet of five Euclid 12-yard bottom-dumps and Mack dump trucks.

The contractor also used two ¾-yard shovels in the nearby borrow area to load a fleet of 18 dump trucks with the levee fill. A total of 305,900 cubic yards of material was needed to complete the 9,300 linear feet of levees.

After the topsoil had been stripped, a 2 to 3-foot-thick clay blanket was laid over the underlying clay stratum to start levee construction. The fill was brought up in various lifts to assure the proper placement of the pervious sand-gravel fill and the impervious clay inside slope of the levee. Both inside and outside slopes are 1 to 3 and are built up to an average height of 12 feet. Levees are 10-feet wide at the top.

Spreading, grading, and compacting were handled by three International TD-14 tractors, an Allis-Chalmers motor grader, and one Allis-Chalmers HD-20 and two HD-90 tractor-dozers pulling sheepfoot rollers. Levees were built up to a 12-foot height to place them above the past high-water storm levels. The normal tidal flow of the existing river was about two feet and there was little or no protection along its banks. Flood levels have reached depths of 10 to 12 feet, causing extensive damage throughout the neighboring communities as well as flooding the major traffic arteries running north-south, like U. S. 1, and east-west, like U. S. 50. The Maryland State Roads Commission has built new bridge structures at higher elevations to carry these major routes over the channel improvements and give them more protection against flooding.

During the channel excavation, a 5-foot-deep trench was cut along the centerline of the channel so that it was possible to determine the characteristics of the underlying material that formed the base for the levees. An impervious clay stratum was the desirable result and it was obtained from the existing material or the placement of a clay blanket. A blanket of impervious clay, about 5 feet thick, was required to reduce seepage through the levees.

About 2,200 feet of the main river

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 225

channel, included in the Reichenbach grading contract, had a bottom width that varied from 100 to 190 feet and side slopes of 1 to 4. The main channel separates near Bladensburg, forming the northeast and northwest branches of the river. Reichenbach built about 1,300 feet of the northeast branch with a bottom width of 40 feet and about 900 feet of the northwest branch with a bottom width of 50 feet. Both branches were built with 1 to 4 side slopes.

Channel excavation was kept relatively dry from seepage and rain by a CMC 10-inch pump. The banks between the improved channels, protected by levees, were graded to a 1 per cent slope toward the channel to assure proper drainage of the bank areas. Levees were tied into the new

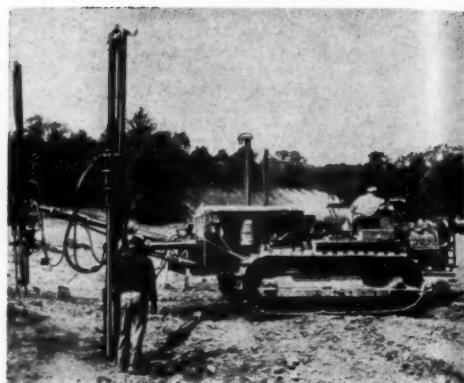
bridge approach road, and rip-rap was placed to protect the levee at this point as well as the approach road fill.

Personnel

Scheduled for completion in July, the flood control and navigation project is under the supervision of the Washington District of the U. S. Army Corps of Engineers. The district engineer is Col. George B. Sumner. E. E. Donaldson is resident engineer for the Corps. F. R. Fought was the superintendent for the grading sub-contractor, B. E. Reichenbach, Inc.

THE END

U. S. sawmills produced 37.5 billion board feet of lumber in 1956.



The Blue Brute tractor-mounted drilling rig is completely self contained. It carries its own air supply and is driven by either the tractor engine or a cross-mounted portable power plant.



For heavy-duty rolling PLUS PORTABILITY...use this BUFFALO-SPRINGFIELD Roller

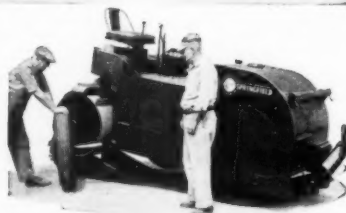
A conventional heavy-duty roller in construction and performance, this 3-5 ton Tandem Roller, when equipped with the Towing Attachment*, is easily transported from job to job. All essential design features of the larger Buffalo-Springfield tandems, *plus portability*, make this particular roller especially popular for handling a large variety of smaller rolling jobs.

Driveways, sidewalks, parking and playground areas, patching and light finishing work are finished fast... and the Portable roller is ready for

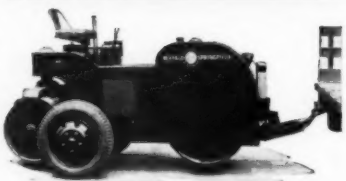
new work at a different location, with minimum time lost.

Rubber tired road wheels are carried out of the way, on a bracket over the drive roll. When the roller is working, there are no tire treads to mar surface materials or produce uneven surface compaction. For heavy-duty roller performance, plus the economy of using *one* roller quickly at scattered locations, get a Buffalo-Springfield Portable Tandem Roller.

See your Buffalo-Springfield distributor now, or write for Bulletin S-58-49 for complete details.



The Roller is easily rigged for towing. Inclined wooden blocks are provided for raising guide roll to slip on road wheels and pin them in place.



Towing hitch is quickly engaged with pintle on towing vehicle. Hand-operated hydraulic jack installed as part of the towing attachment is employed to raise the drive roll off ground.

*Towing Attachment is available as optional equipment.



BUFFALO-SPRINGFIELD ROLLER CO.
DIVISION OF KOEHRING COMPANY • SPRINGFIELD, OHIO

For more facts, use Reader-Reply Card opposite page 18 and circle No. 226

Tractor-mounted drill rig completely self contained

■ A new tractor-mounted drilling rig for production blast-hole drilling on rock excavation projects, quarrying, and ditching is announced by the Worthington Corp. The Blue Brute drilling rig is a completely self-contained unit carrying its own air supply and driven either by the tractor engine or a cross-mounted portable power plant.

The two hydraulically controlled jibs can be operated through a total arc of 100 degrees, vertically or horizontally. The boom can be extended for any distance up to 5 feet, providing a large drilling area and making it possible for more blast holes to be drilled from one location than conventional equipment, which must be relocated after each hole is drilled.

Special features include the Blue Brute UM-40 chain feed and drifter assembly; a long-wearing oversize hydraulically-operated clutch between the tractor PTO and the compressor; and locking hydraulic controls to maintain the position of the drill.

For further information write to the Worthington Corp., Worthington and Harrison Aves., Harrison, N. J., or use the Request Card at page 18. Circle No. 13.

Longer V-belt life

■ Simple precautions to prolong the life of V-belts, increase drive efficiency, and thereby assure full continuous production are contained in a new bulletin from the Allis-Chalmers Mfg. Co. The bulletin describes various types of V-belts and tells how to select and match them. It lists seven steps for the correct installation of belts and offers as many hints for making them last longer.

Portrayed are eight of the most common causes of V-belt failure. These include snub break, slip burn, base cracking, abrasion, oil deterioration, rupture, ply separation, and worn sides. Information in the bulletin is applicable to all types of V-belts manufactured today.

To obtain Bulletin 20X6234C write to the Allis-Chalmers Mfg. Co., 951 S. 70th St., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 151.

CONTRACTORS AND ENGINEERS



The new G-R Series 80 centrifugal pumps, as this cutaway shows, have no check valves to interfere with re-priming.

New centrifugal pumps have no check valves

■ A new line of centrifugal pumps designed without the check valve and featuring straight-in suction with the pumped liquid entering directly at the eye of the impeller is available from The Gorman-Rupp Co. The Series 80 pumps are available with skid or wheel mounts and are powered either by a gasoline engine or an electric motor.

When one of the new contractor's pumps has been shut off, the absence of the check valve permits in-line liquids to return by gravity from the suction and upper pump sections to the pumping source. This self-emptying feature is controlled in the larger models by a restrictor device to facilitate priming.

For further information write to The Gorman-Rupp Co., 305 Bowman St., Mansfield, Ohio, or use the Request Card at page 18. Circle No. 139.

Off-highway haul units

■ A 24-page bulletin on the Dumptor, an off-highway hauling unit manufactured by the Koehring Co., shows how hourly haul output can be increased by approximately 20 per cent. On-the-job photos, combined with schematic drawings, show how fast spotting, elimination of turns, and a one-second gravity dumping operation are features of the Dumptor which makes this additional work load possible.

To obtain Bulletin K486 write to the Koehring Co., 3026 W. Concordia Ave., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 58.

Portable aggregate plants

■ Portable aggregate plants manufactured by the Iowa Mfg. Co. are diagrammed in a bulletin that shows how they can be set up in various combinations to produce crushed and screened aggregate to meet practically any quantity or specification requirement.

A double page gate-fold devotes a page each to the different types of primary units, intermediate scalping units, secondary units, and screening and bin units.

To obtain Bulletin Unit-6 write to the Iowa Mfg. Co., 916 N. 16th St., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 26.

THE IDEA OF SALVAGING old concrete discarded on city dumps has paid off for Souter Sales, Detroit, Mich., which now processes as much as 500 tons of the material daily for sale to paving contractors. Scrap sidewalk slabs being dumped from the Perfection dump body will go through the Universal 25X36 jaw crusher powered by a 6-71 Detroit Diesel engine. A 30-foot conveyor loads trucks with the crushed concrete.



How a midwest steel producer TRIPLED TRACTOR-SHOE LIFE

It's "tough-going" in a slag pit! Heavy loads, the grinding impact of abrasive rock and metal, really put tractor shoes to the test. And that's exactly what this steel producer did.

Amsco® cast Manganese Steel Tractor Shoes were installed in place of rolled shoes. The result: a 3-time increase in service life. While rolled shoes had previously been replaced after one season's service, the Amsco pads lasted nearly 3½ years—a total of 3374 service hours.

Here's further proof that Amsco Manganese Steel—"the toughest steel known"—can save you money and replacement time wherever severe impact and abrasion are a problem. Call your nearest Amsco representative, or write us direct, for further information on Amsco Tractor Shoes.



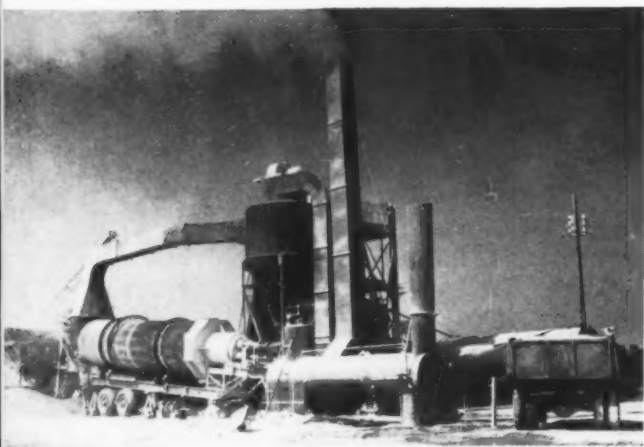
Amsco Manganese Steel Tractor Shoes
In addition to excellent impact and abrasion resistance, Amsco Tractor Shoes have counter-sunk bolts. This means less wear on bolts, often saves bolt-replacement when changing pads.



AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DEL., OAKLAND, CAL., ST. LOUIS, JOLIETTE, QUEBEC
For more facts, use Reader-Reply Card opposite page 18 and circle No. 227



The white cloud of steam from the stack of the Cedarapids asphalt plant testifies to the effectiveness of the dust collection system.

Natural gas is burned in dryer and steam boiler of plant; up to 1,160 tons of binder produced in 10-hour day for runway

Smoke and dust problems are cut as plant keeps hot-mix output high

By burning natural gas in the big dryer, as well as in the steam boiler of an asphalt plant, a contractor eliminated the usual smoke and dust problems while maintaining a very high production rate of binder and surface-course material for runway paving at the Kingsville, Texas, Naval Auxiliary Air Station.

This \$1.6 million project, handled by Heldelfels Brothers, Corpus Christi, Texas, included construction of a new runway, 8,000 feet long and 200 feet wide, together with connecting taxiways, a sewage treatment plant, and other facilities. A section 500 feet long at each end of the runway was paved with concrete ranging from 11 to 15 inches in depth. The center 7,000 feet consisted of a 16-inch caliche sub-base, 6 inches of crushed rock base, and 3 inches of hot-mix bituminous binder and surfacing.

Caliche for the subbase was produced in the contractor's pit about seven miles from the base and was trucked to the runway. The material was thoroughly wet by water trucks that hauled from a 10,000-gallon storage tank set up on the bank of creek where the water was obtained. Caterpillar No. 12 motor graders mixed the caliche until the water was well dispersed and then spread the material.

Compact with vibrating roller

A Vibro-Plus vibrating roller effectively compacted the lifts in three passes. Pulled by a McCormick-Deering tractor, this little roller with a 54-inch width and travel speed of 2 mph appeared small and slow in operation, but it was able to thoroughly compact a 10-station section 200 feet wide in a day of operation. The work it turned out dovetailed with the other job operations.

In addition to being used for the runway subbase, the caliche was used as base material for a 150-foot blast area at each end of the runway. Here, a 6½-inch depth of the material was placed and compacted in the same manner as it was on the runway. The crushed stone base material for the runway, which came from commercial sources, was also handled by the same equipment in the same way.

The completed base was primed with MC-1 cutback asphalt at a rate of 0.2-gallon per square yard, and the prime was given time to penetrate

(Continued on page 44)

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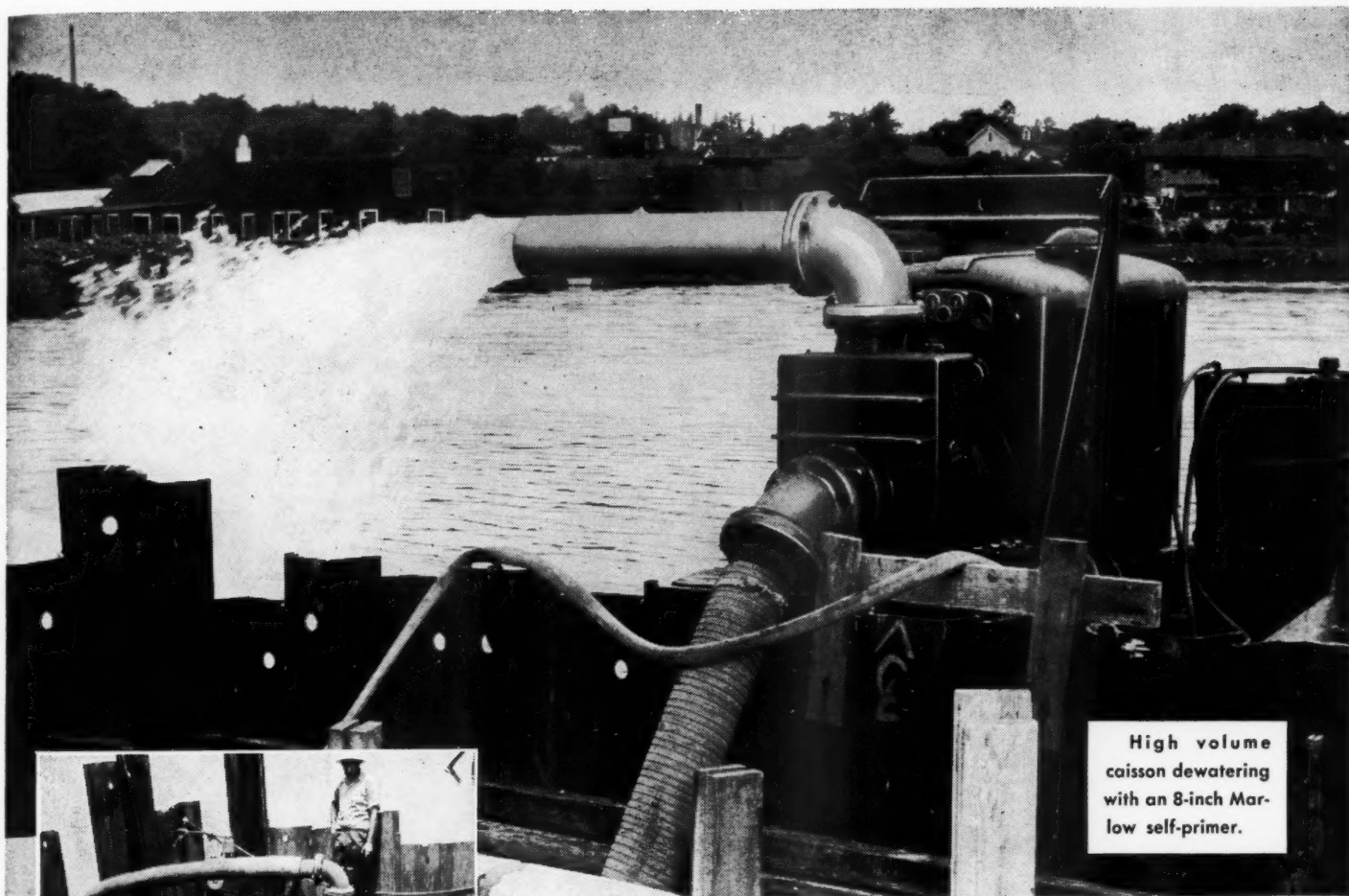
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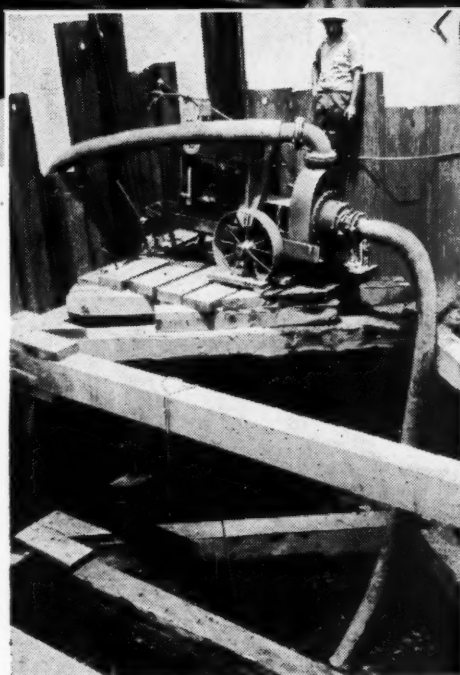
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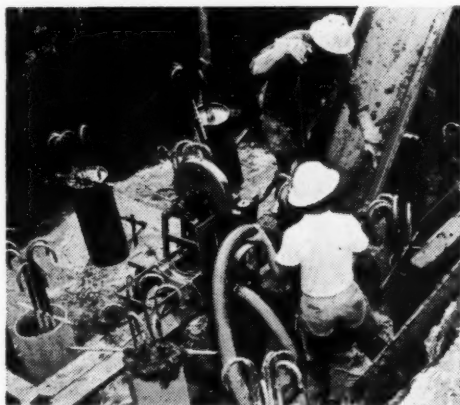
For more facts, use Reader-Reply Card opposite page 18 and circle No. 228



High volume
coisson dewatering
with an 8-inch Mar-
low self-priming.



No water problem on this bridge footing with a dependable Marlow "Diffuser Primed" pump on the job.



A Marlow Mud Hog moving concrete wastes. These famous "Mud Hogs" are suitable for pumping almost any heavy waste on the job.

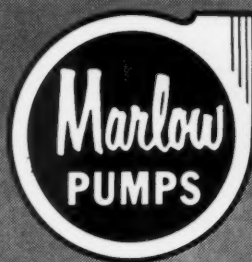
Connecticut Turnpike Moves Ahead On Schedule

Dependable Dewatering A Major Help

The new Connecticut Turnpike is an important part of the Nation's enlarged highway building program. It is estimated that total construction costs will be in the neighborhood of \$500,000,000. Running through one of the country's most densely populated areas, it reaches 128 miles from Greenwich, in the New York City vicinity, to Killingly, near the Rhode Island border.

Along the highway's entire length, many pumps were used to dewater excavations, empty caissons, supply equipment, move concrete waste, and other heavy or sluggish liquids. The photographs on this page show the two principle types of application, Marlow fast-priming centrifugals for high volume pumping and Marlow Mud Hogs for heavy or muddy fluids. Superintendents and mechanics on the job say that they can depend on their Marlow pumps and they particularly like their self-cleaning and non-clogging features as well as their ability to stay on the job under an extra-heavy work schedule.

With one of the world's finest and most complete line of pumps, Marlow has an enviable reputation for service and dependability. Marlow pumps are available quickly from three factories and dealers in all localities. Look for the heading "Marlow Pumps" in the Yellow Pages of your classified telephone directory. Ask your Marlow dealer about the Marlow line of contractors' pumps.



6-271

**DIVISION OF
BELL & GOSSETT CO.**

Midland Park, N. J.

Morton Grove, Illinois

Longview, Texas

For more facts, use Reader-Reply Card opposite page 18 and circle No. 229

(Continued from page 42)

into the base. A tack coat of RC-2 cutback asphalt was applied ahead of the binder at a rate of 0.07-gallon per square yard, and the 2-inch binder course was similarly tacked before the 1½-inch surface course was put down.

An Etnyre 1000-gallon distributor applied the several shots of cutback asphalt. The sand for the seal coat was spread by a Buckeye spreader and then broomed and rolled to get it bound as tightly and uniformly into the surface as possible.

Burns natural gas

The Cedarapids asphalt plant that supplied the hot mix for the paving was set up near one edge of the airfield, within easy haul distance of the runway. The plant, particularly free of the dust and smoke nuisance common to so many asphalt plants, had a large and efficient dust collection system that effectively removed the dust from the dryer discharge as well as other plant units. Coupled with this was the use of natural gas as a fuel for the burners in the dryer and for the auxiliary steam boiler that heated the asphalt. A white cloud of steam was the usual discharge from the plant stack.

Aggregates were received by rail and unloaded by a crane and clamshell bucket. A Caterpillar D7 tractor-dozzer maintained the stockpiles within reach of the Lorain Model K-51 crane that fed the plant bins. Reciprocating feeders on the three-compartment bin fed the aggregates to the cold elevator, which discharge into the 98-inch x 30-foot dryer. The natural gas burners in this big dryer burned 50,000 cubic feet of gas per hour.

Hot materials went to the screening plant via the hot elevator, and from there to bins, and batches were weighed out to the 4,000-pound pug-mill.

Asphalt was delivered by truck transports from the Humble Oil & Refining Co. refinery at Corpus Christi. The 27,000-gallon asphalt storage tanks were heated by steam from an 87-hp gas-fired boiler.

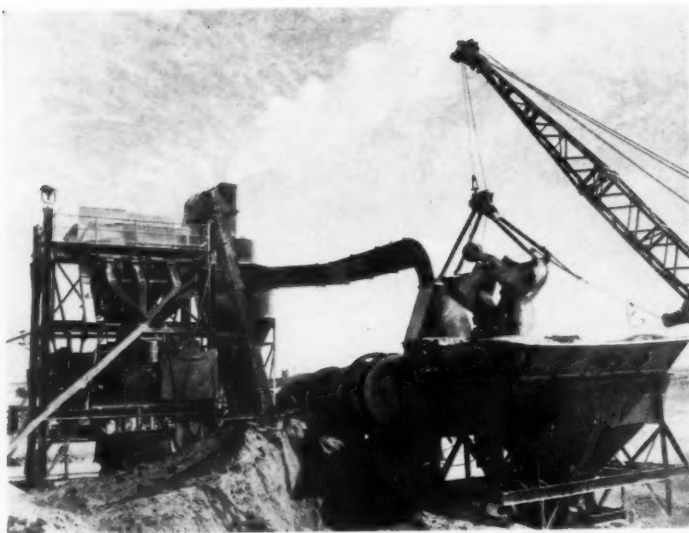
Although this asphalt plant was rated at 100 tons per hour, it consistently produced 1,000 to 1,160 tons of binder material per 10-hour day.

Dump trucks hauling from the plant dumped the material into a Barber-Greene finishing machine on the runway. An Ingram 10-ton, 3-wheel roller made the first pass, and it was followed by an Ingram 11-wheel pneumatic roller pulled by a Case tractor. Final compaction was applied by a Buffalo-Springfield 12-ton tandem roller. With this method of compaction, it was not difficult to get the required 96 per cent of laboratory density on both the binder and surface courses.

Concrete paving

Construction of the concrete portions of the project was sublet to E. B. Darby, Inc., Pharr, Texas. Dry batches were proportioned in a Blaw-Knox batch plant consisting of a two-compartment coarse aggregate bin, a sand

Fed to plant bins by a Lorain crane with a clamshell bucket, aggregates are routed to the cold elevator to be discharged into the dryer. The pug-mill on the lower platform of the tower has a 4,000-pound capacity.



New A-Line models range from ½-ton Pickups through 33,000 lbs. GVW Six-Wheelers.

NEW ACTION-STYLING! MORE USABLE POWER!

Here is the crowning achievement of fifty years of quality truck production—the great new Golden Anniversary INTERNATIONAL Trucks!

They're Action-Styled with fresh, clean functional lines that set a new style pace.

They're powered by new engines that put out more usable horsepower—including the most powerful "six"

available in its field! They have exclusive new cab mountings for quieter, more level ride. New brakes, new steering, new frames—and many other new features.

The result is a new line of trucks that—more than ever before—are built to cost least to own!

See and drive these newest INTERNATIONALS today! International Harvester Company, Chicago.

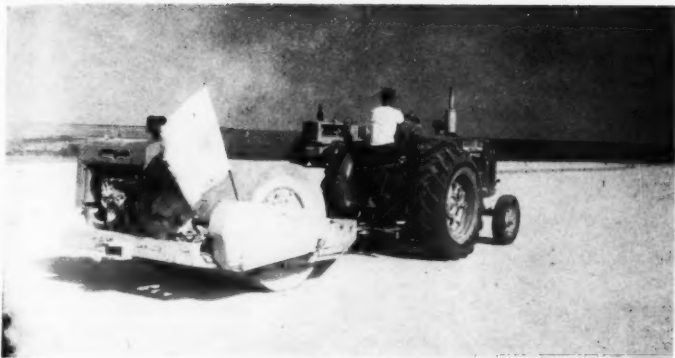
Trucks Unlimited...Powered for Modern Traffic...Plus Modern Comfort

Handsome "Golden Jubilee" Pickup with the longest all-steel body in its class. Only Panel with third door. New 8-passenger Travelall® models. New cab-forward models with ideal 89-inch BC dimension. Tractors to 48,000 lbs. GCW. Wide range of all-wheel-drive trucks.

Redesigned engines produce increased power without strain from new combustion chamber and valve position... more usable power that's "bred for the job"... at low rpm to keep operating and maintenance costs low. New quick-starting 12-volt ignition.

Biggest windshield—1,181 sq. in.—and widest cab in their class! New "Silent-Vent" door wings. New, wider front and rear springs. Exclusive level-riding 5-point cab mounting. Bigger brakes with more lining area, larger cylinders and boosters for quicker, easier stops.

CONTRACTORS AND ENGINEERS



Lifts of caliche base are compacted in about three passes by a Vibro-Plus vibrating roller powered by a Waukesha diesel engine. The roller, with a 54-inch path and 2-mph travel speed, is pulled by a McCormick-Deering tractor.



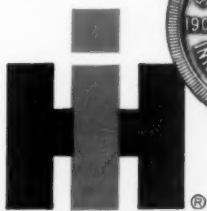
The Barber-Greene finisher working on the 8,000-foot-long and 200-foot-wide runway is loaded with hot-mix by a Ford dump truck. The first compaction pass will be made by the Ingram 10-ton, 3-wheel roller, left.



Other INTERNATIONALS, to 96,000 lbs. GVW, round out the world's most complete line.

NEW Golden Anniversary INTERNATIONALS

Cost least to own!



Motor Trucks • Crawler Tractors • Construction Equipment
McCormick® Farm Equipment and Farmall® Tractors

For more facts, use Reader-Reply Card opposite page 18 and circle No. 230

bin, and a 400-barrel cement plant. A P&H crane charged the bins.

Caterpillar No. 12 motor graders and an Ingram roller prepared and compacted the base ahead of the paving train, while a Blaw-Knox planer cut the final grade just ahead of the paver. The concrete was mixed and placed by a Rex dual-drum 34-E paver that operated from outside the lane being paved. The remainder of the paving train included a Blaw-Knox finishing machine equipped with two Mall vibrators, a Koehring longitudinal float, and a Flex-Plane curing spray using Lamco curing compound.

A typical concrete batch consisted of:

2½-inch gravel	2,145 pounds
Sand	1,180 pounds
Cement	5.5 sacks
Water	25.9 gallons

Septamene 7 admixture was added by an automatic batching device at the paver at a rate of one pint per cubic yard of concrete. This admixture provides for air-entrainment, reduces the amount of mixing water required, and gives a high early strength.

Shilstone Testing Laboratory, Houston, provided the materials controls and testing for the project. They took frequent samples for air content, maintaining the volume of entrained air at about 5 per cent. Seven-day beam tests of the concrete averaged around 650 psi while the 28-day tests averaged at least 850 psi—well in excess of the specification requirements.

Personnel

The Kingsville Naval Auxiliary Air Station is a unit of the Naval Air Advance Training Command operated from the Corpus Christi Naval Station. This field, together with others at Beeville, Alice, Orange Grove, and Corpus Christi serve to spread the flight training operations over a greater area, thus reducing congestion. Construction of all facilities in this area is handled by the Bureau of Yards and Docks at the Corpus Christi Naval Station. Capt. J. F. Cunniff is Officer in Charge of Construction for the Naval Air Advance Training Command.

Lt. Cmdr. H. R. Witt was resident officer in charge of the Kingsville base. His assistant was Lt. (j.g.) R. B. Matlock. The chief inspector on the project was Austin Smith.

Superintendents Charles Trickle

and G. C. White supervised the construction operations for Heldenfels Brothers with the assistance of W. C. Lynn at the asphalt plant, Frank Brown in charge of the laying operation, Lloyd Terry handling the earthwork, and William Anderson looking after the concrete. Eric Browne had charge of the Shilstone Testing Laboratories at the base. **THE END**

Measured earth pressures covered in HRB bulletin

New findings in "Pressure-Deformation Measurements in Earth" are presented in the Highway Research Board Bulletin 141. Studies, conducted at Iowa State College to measure lateral pressures on retaining walls, showed a relationship between measured pressures and pressures calculated according to the classical Boussinesq theory of stress distribution. A paper reviews this work, and presents current data and indicates their relationship to pressures calculated by traditional methods.

Another paper reports on studies made by the U. S. Army Corps of Engineers to determine the nature of stress distribution in a large size cell and its relation to the stiffness of the cell and the soil mass. The last paper discusses the effect of large numbers of loads on two soils of national interest because of the many tests made on them—a Vicksburg and an Idaho silty clay (WASHO road test soil).

Bulletin 141, priced at \$1.00, can be purchased from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

Accident causes studied, analyzed in HRB bulletin

"Accident Analysis and Impact Studies", HRB Bulletin 142, contains five reports on a series of traffic accidents. Controlled car crashes, conducted by the Ford Motor Co., is the topic of the first paper.

Accident and injury data on 3,203 automobiles involved in injury-producing accidents determining the effects which speed may have on the frequency of dangerous or fatal injuries, is the topic of the second paper. Another paper details factors related to traffic death rates. The method developed by the Texas Highway Department for analyzing highway accident data is reported in the fourth paper. The last topic discusses Virginia's accident analysis system.

Case reports, graphs, and pictures are contained in the bulletin.

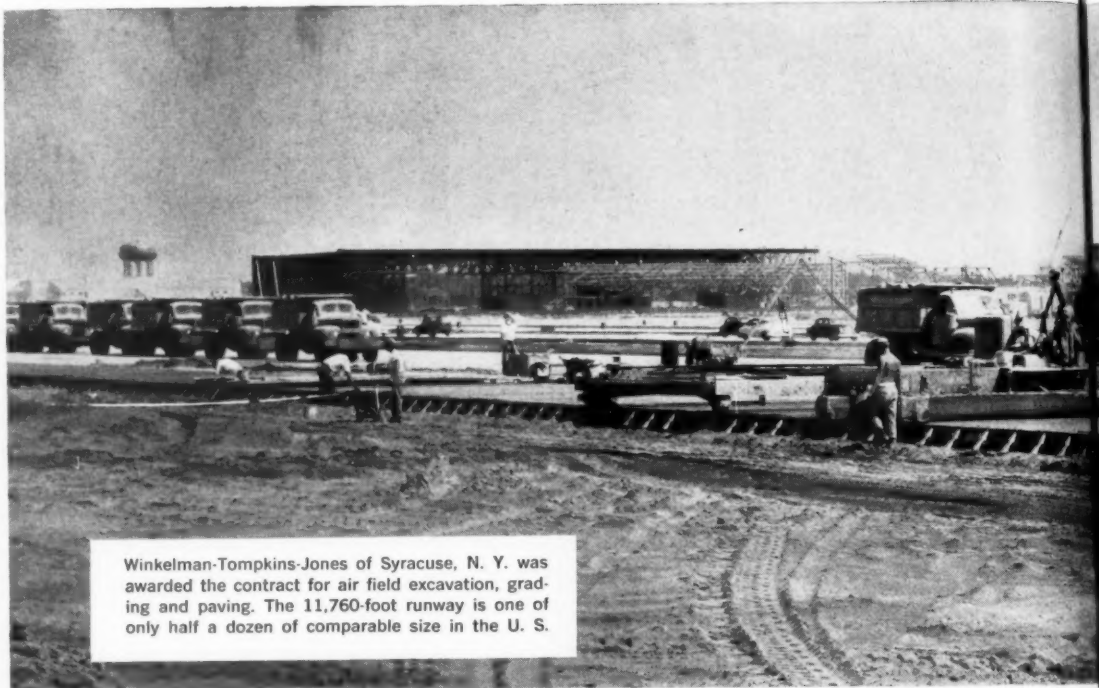
Priced at \$1.00, the bulletin is available from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

Kans. turnpike revenues

In February, 222,737 vehicles used the Kansas Turnpike, this is an increase of 8,680 vehicles for January. Revenue from toll operations reached \$225,964.62 in February for a daily average of \$8,066.28, up more than \$900 from the daily average of \$7,100.46 for January.



WORKING CAREFULLY in tight quarters, this Euclid S-7 scraper, powered by a General Motors 4-71 diesel engine, drops a load of topsoil close to one of the homes under construction for a new building project in New Jersey. This is one of 40 such rigs used by Arnolt Construction Co., Metuchen, for leveling hills, building roads, and similar work at the site.



Winkelman-Tompkins-Jones of Syracuse, N. Y. was awarded the contract for air field excavation, grading and paving. The 11,760-foot runway is one of only half a dozen of comparable size in the U. S.

Gulf Products keep equipment rolling at

At Plattsburgh, New York, one of the most historic posts of the U. S. Army is being transformed into an air base for B-47 medium bombers. In addition to air field grading and paving, this multi-million dollar project includes construction

of hangars, dormitories, mess halls, administration buildings and related facilities.

Air field grading alone has involved excavation of more than 4½ million cubic yards—and more than ½ million cubic yards of concrete will be



Parking apron extensions are being built by Bero Construction Company of Buffalo, N. Y. Bero is one of many leading contractors who use Gulf petroleum products exclusively.

THE FINEST PETROLEUM

CONTRACTORS AND ENGINEERS

The Pettibone Speed Swing 180-degree loader is now available with a Torqmatic power shift transmission and planetary drive axles.

Power shift transmission available on swing loader

■ The Pettibone Speed Swing 180-degree loader is now available with an Allison Torqmatic power shift transmission and planetary drive axles, according to the manufacturer, the Pettibone Mulliken Corp. Available as optional attachments are a 2½-ton crane, forks, a 4-cubic yard snow and light aggregate bucket, and an 18-foot boom extension.

The Speed Swing has hydraulic steering and fingertip-touch hydraulic controls. It is offered with two or



four-wheel steering and four-wheel drive.

According to the manufacturer, the Speed Swing has a reach three to four times longer than that of conven-

tional loaders. Its 180-degree boom swing enables it to load into trucks from either side or from the rear without having to maneuver into position. By eliminating up to 90 per

cent of the maneuvering necessary with conventional loaders, the company states, the Speed Swing speeds up loading cycles considerably.

For further information write to the Pettibone Mulliken Corp., 4700 W. Division St., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 145.

Sealer covers, protects conveyor belt splices

■ A self-vulcanizing rubber repair material that covers or protects conveyor belt splices is available from the Flexible Steel Lacing Co. According to the company, Rema seals out moisture and reduces mildew, rot, and deterioration. It also makes belt operation quieter and prevents the seepage and sifting of fines.

Two methods of applying the rubber sealer are usually employed. In one, the fasteners are recessed in the belt and covered with Rema surface strips. This provides a smooth belt surface. Rips in the belt can also be repaired in this manner.

The alternate method involves sealing both ends of the belt with Rema Red filler sheeting before affixing the fasteners. This method minimizes the deterioration of belt ends.

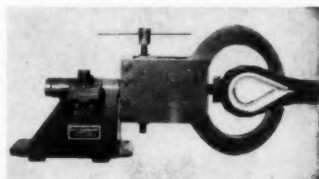
No heat or vulcanizing is required. The belts can be put into operation as soon as the joint is made, the company reports.

For further information write to the Flexible Steel Lacing Co., 4607 Lexington St., Chicago 44, Ill., or use the Request card at page 18. Circle No. 137.

Wire rope splicer handles ¼ to 1½-inch wire rope

■ A splicer that will handle ¼ to 1½-inch diameter wire rope is available from Quay Industries. The Model 10-B Torquemaster splicer has two jaw assemblies—one for diameters of from ¼ to 1 inch and the other for diameters of from ½ to 1½ inches. Both assemblies make use of the same base.

According to the manufacturer, the Model 10-B is 50 per cent faster than



The Model 10-B Torquemaster wire rope splicer handles diameters of from ¼ to 1½ inches. Quay Industries, Jacksonville, Fla., is the manufacturer.

other wire rope splicers. It features a seating design which permits holding a wide range of wire rope. A special thimble block for the large assembly permits it to handle ¼-inch rope.

For further information write to Quay Industries, 2135 Riverside Ave., Jacksonville 4, Fla., or use the Request Card at page 18. Circle No. 141.

and Fine Service Plattsburgh Air Force Base

poured in paving the runway, taxiways and parking apron. The runway will be a single concrete strip, 11,760 feet long, 300 feet wide and 14 inches thick, specially designed to take the 100,000 pound dual wheel loads of B-47's. Taxiways and parking apron will also be king-size.

Tight schedules must be maintained on this huge project—there's no time for costly mechanical delays. That's why 90% of the petroleum products used by all contractors on this job are Gulf products. Gulf quality fuels and lubricants insure top engine performance, and close-at-hand distribution points provide prompt delivery.

Let Gulf serve you on your next job. Write today for your copy of "Gulf and Your Business" . . . and for your maintenance crew, get a copy of Gulf's revised lubrication and maintenance manual "Contractors' Guide."



Gulf Oil Corporation

4241 Gulf Building, Pittsburgh 30, Pa.

Without any obligation on my part, send me a copy of:

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Title _____

Company _____

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PRODUCTS FOR ALL YOUR NEEDS

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 231

Gravel, earthwork firm takes on bituminous paving—makes it pay



Rock is fed to the trap by Caterpillar D8 tractors with U-dozer. A Pioneer 36-inch conveyor, 40 feet long, delivers base rock to trucks hauling to the road.

Coordinating a newly acquired bituminous paving spread with well-established grading and graveling spreads has rounded out a smooth working team for William Collins & Sons, Inc., Fargo, N. Dak. Already known in the earthwork and graveling fields, Collins expanded his activities last season to take on some bituminous paving jobs.

One of these was an 18-mile section of base and paving on U. S. 2 east of Minot, N. Dak. This project, requiring 89,000 tons of bituminous mixtures, included as subbase course 9 inches of pit-run gravel, topped with two bituminous lifts.

The first blacktop course was a 2½-inch-thick stabilized asphalt base, 38 feet wide. The final lift consisted of a 2½-inch surface course 24 feet wide, which was centered on the 38-foot base. This provided 7-foot-wide paved shoulders on both sides of the road. The roadway surface was sealed with cutback asphalt and chips.

Collins, who handled grading under another contract the previous season, started work by having the graveling spread place the 9 inches of pit-run gravel. The material was obtained from pits located some distance from the road. In one typical pit, the contractor set up a loading system that easily handled 600 cubic yards per hour.

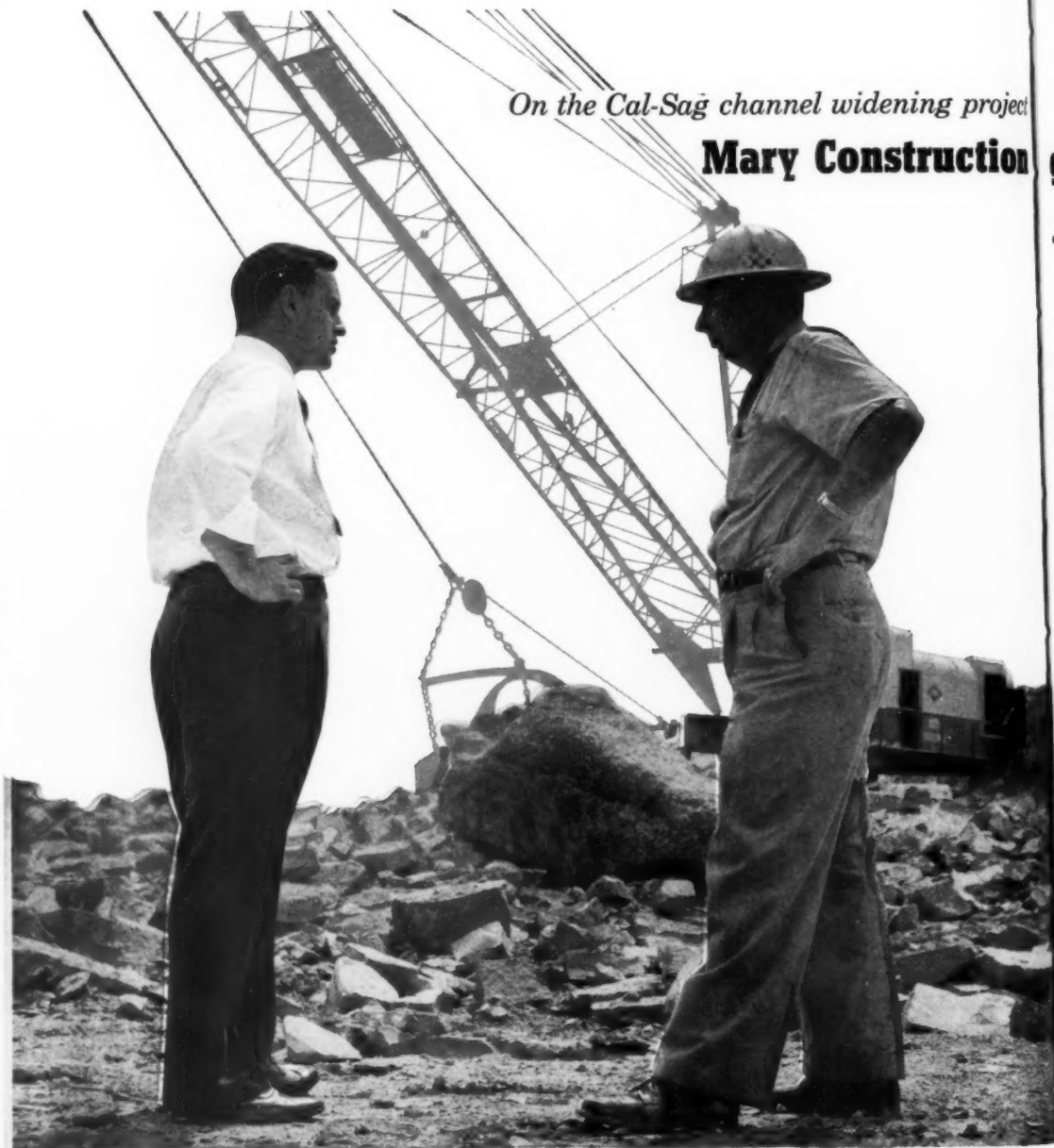
A trap was built at one edge of the pit to feed a Pioneer 36-inch conveyor 40 feet long. The discharge end of the conveyor fed directly into trucks through a bar grizzly that removed oversize. Two Caterpillar D8 tractors with U-dozer, pushing the gravel from the pit to the trap, were kept busy keeping up with the fleet of trucks hauling the material away.

Building gravel base

The trucks dumped the base material on the roadway, where it was spread and shaped by Caterpillar No. 12 motor graders. The base was then watered and rolled with rubber-tire rollers and finally shaped to finished grade by the motor graders.

The finished base was primed with MC-1 cutback asphalt applied at a rate of 0.3 to 0.35-gallon per square yard. A Rosco 1,500-gallon distributor powered by an International UD-4 engine and mounted on a Ford T750 truck applied the cutback.

In order to permit traffic to use the base, the contractor covered it



On the Cal-Sag channel widening project

Mary Construction gets

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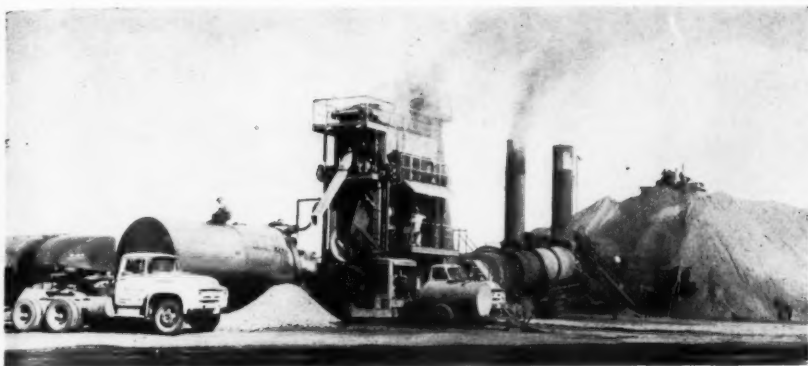
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Adamec and Garms watch Lima dragline in action. Helping customers with the lubrication of equipment such as this is something for which Steve Adamec is well fitted. Steve has a mechanical engineering degree from Purdue. He has been providing technical service to Standard customers for 10 years. Steve is a graduate of the Standard Oil Company Sales Engineering School.

Project Superintendent Bill Jordan and Ray Elgas lay out schedule for servicing Page dragline. Page has 9.5 yard bucket, is powered by Page ½ vertical V6,700 h.p. diesel.



This Madsen asphalt plant, supplying stabilized base and surfacing material for the work, is supplied with a load of asphalt cement by a Ford F700 truck-trailer. Dry material from two dryers is raised in the hot elevator to the gradation unit, then flows by gravity to the weigh bucket and the 4,000-pound batch pugmill.

Tank cars, heated by steam generator so that asphalt is warm enough to handle, are unloaded by a Cleaver-Brooks bituminous distributor. The 5,000-gallon tank-trailer pulled by the Ford F700, delivers the bitumen to the asphalt plant for storage.



project

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gets the job done

...uses **STANDARD** Fuels and Lubricating Oils

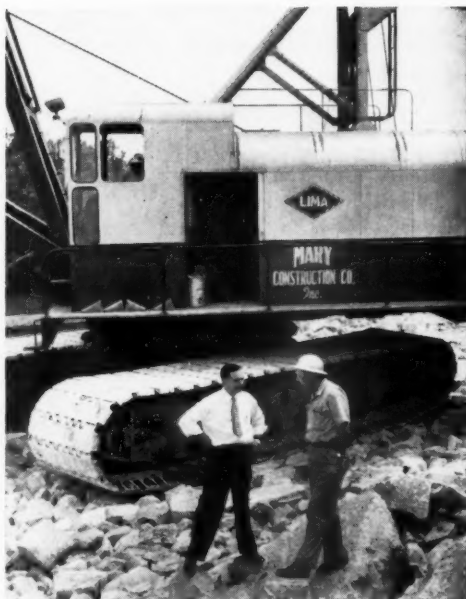


In 565 days, Mary Construction will widen 3.5 miles of the Cal-Sag ship channel. The channel will be widened to 225 feet from its present 60 foot width. To do this, Mary Construction will move 2.8 million yards of dirt and rock. Big job. Big need for service on gasoline, diesel fuel, lubrication oils. Mary Construction buys from the Standard Oil Company.

This is why Irvin Garms, general superintendent, and Bill Jordan, project superintendent, decided on Standard Oil products. First, they knew they would get products of top quality . . . products that meet or surpass the equipment manufacturer's recommendations. Just as important, they knew they would get service. Standard's bulk plant is only four miles from the project. Deliveries are made twice daily. In the early stages of the project, additional deliveries were made at midnight and at 8:00 a.m. Additional emergency trips were frequent at first, but with the delivery point only four miles distant, there was no strain.

With this service came another important Standard Oil plus—Standard Technical Service. Men experienced in rendering such service to contractors were assigned to the project from Standard's Joliet Division office only a few miles away. Ray Elgas and Steve Adamec, lube specialist and Chief Automotive Engineer respectively, spend hours at the site helping make sure equipment is never down for lack of lubrication or service.

Want this kind of service on your job? You can get it anywhere in the 15 Midwest or Rocky Mountain states. Call your nearest Standard Oil office. Or write, Standard Oil Company, 910 S. Michigan Ave., Chicago 80, Ill.



Steve Adamec, Standard Oil Chief Automotive Engineer, and Irvin Garms, General Superintendent for Mary Construction, discuss lubrication of Lima dragline. Lima unit, one of two draglines on the job, is powered by Caterpillar D-397 engine.



Ray Elgas (right) gets some facts about Cat operation from operator Scotty Cummings. For more than 12 years, Ray has been helping automotive customers with lubrication technical service. He qualified for this work after completing the Standard Oil Sales Engineering School. Ray also attended the University of Nebraska.



STANDARD OIL COMPANY
(Indiana)

with a sand blotter applied by a Hi-Way spreader. A supply of sand for this purpose, stockpiled at the hot-mix plant, was loaded into trucks by a Caterpillar 977 Traxcavator.

Aggregates for the bituminous mixes were obtained from a gravel pit where the contractor had set up a TelSmith portable crushing and screening unit. A Caterpillar D8 tractor with a U-dozer pushed gravel from the pit to a trap feeding a Pioneer 30-inch belt conveyor. The conveyor discharged the gravel through a grizzly directly into the TelSmith crushing and screening plant. Finished material was fed from the plant to trucks hauling to the stockpile at the asphalt plant.

Asphalt cement received by rail from the Farmers Union refinery at Billings, Mont., was unloaded on a Great Northern Railroad spur at Surrey, N. Dak. The cars were first heated with a steam generator to warm the asphalt so that it could be handled by a Cleaver-Brooks bituminous booster. The material was transferred to a 5,000-gallon trailer-tank pulled by a Ford 700 tandem-axle tractor, and this rig delivered the bitumen to the asphalt plant, where it was pumped into storage tanks.

The bituminous mixes were produced in a Madsen plant. The aggregates were fed from the stockpile by a Caterpillar D8 tractor-dozers to two belt conveyors that supplied the two dryers of the plant. Dry material from both drums was carried by the hot elevator to the gradation unit at the top of the plant.

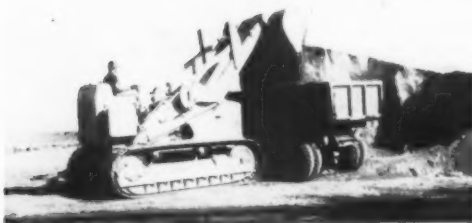
Since the plant was set up in the wide open spaces where dust was not a problem, no particular attempt was made to collect or control the escape of dust.

The aggregates and asphalt were weighed out into a 4,000-pound batch pugmill. Each of the Ford 700 tandem-axle trucks took five of the 4,000-pound batches for a total of 10 tons per load. Here again, the gravel spread cooperated with the paving spread to supply the extra trucks needed to haul the mix on the long hauls. The paving spread had 14 of its own trucks, but this was not enough to keep the paver going on the longer hauls.

Use two pavers

Both the asphalt-stabilized base

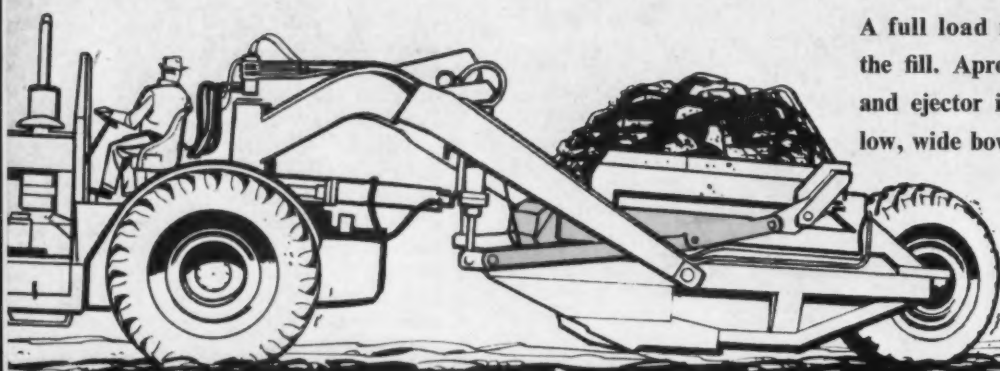
—For more facts, circle No. 232



Sand, used to blot the prime coat of cutback asphalt, is loaded to a truck by a Caterpillar Model 977 Traxcavator.

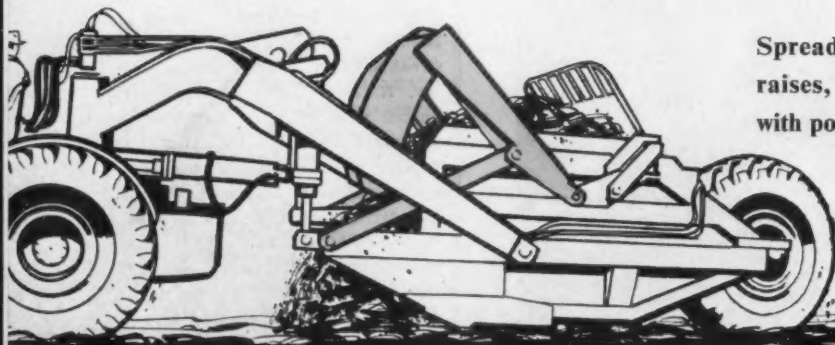


Hot-mix aggregate is supplied for the job by this Tel Smith crushing and screening unit powered by a GM diesel engine. Material dozed to the trap by the Cat D8 goes to a Pioneer 30-inch belt. A grizzly removes oversize.



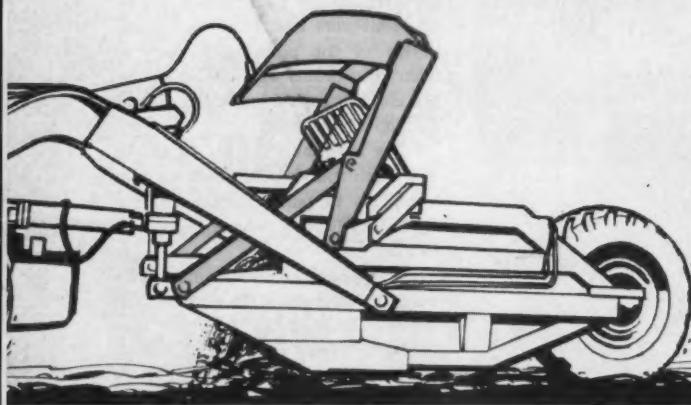
A full load moves on to the fill. Apron is closed, and ejector is at rear of low, wide bowl.

How Allis-Chalmers' patented 3-point scraper linkage



Spreading starts. As the apron raises, the ejector moves forward with positive force, accurate control.

assures fast, clean, controlled spreading of any material



As ejector moves toward cutting edge, linkage simultaneously moves apron forward and upward, providing opening large enough to let any load fall free without jamming. Result: faster cycles, higher production, more profit!

Only your nearby Allis-Chalmers dealer can offer you this important advantage. See it demonstrated now . . . on either motor or pull-type scrapers. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

Engineering in Action

For more facts, use Reader-Reply Card opposite page 18 and circle No. 233

(Continued from preceding page)

course and the surfacing course were laid by two Barber-Greene finishers. One of these was extended to pave a 13-foot width, while the other was set at 12 feet. The 38-foot width of the base course was laid in two 13-foot passes and one 12-foot pass. The 24-foot-wide surfacing was put down in two 12-foot-wide passes.

The same aggregate was used for the two courses, but more asphalt cement was used in the finish course than in the base. This made it simple to change from one mix to the other at the plant, and made it possible for the paving crew to alternate between the base and surfacing on short notice.

Both courses were compacted by rolling with two Huber 10-ton tandem rollers which were assisted, when necessary, by a 5 to 8-ton roller.

Before laying either the base or surface courses, the contractor carefully swept the surface of the previous course to remove all loose dirt and dust. A hydraulically controlled broom on the front of a Massey-Harris-Ferguson tractor handled most of this job. The surface of the base course was also given a fog coat of 120 to 150 AC to act as a tack coat prior to the application of the surface course.

The finished surface course was sealed with a shot of RC-3 cutback asphalt applied at a rate of 0.32 to 0.35 gallon per square yard. A generous covering of 3/8-inch rock chips, spread on the fresh seal coat by the Hi-Way spreader, was then rolled in. This produced a non-skid armor coating with a distinctive color that contrasted with the black shoulders to delineate the roadway.

Moving time

While Collins' several spreads frequently cooperate by the exchange of trucks, crushers, dozers, and other equipment, as well as the men to operate the rigs, the real test of coordination between the spreads is moving time. When one spread is ready to move to a new location, all available trucks and trailers of all three spreads are called in to make the move.

Since North Dakota jobs are frequently located in remote areas, where housing accommodations for the workmen are not available, the workmen and their families live in trailer

CONTRACTORS AND ENGINEERS

camps near the jobs. The contractor usually provides the site, together with electric power, water supply, and sanitary facilities. The families have their own trailers, and single men live in bunkhouses and get their meals at a mobile kitchen-diner.

When a job is completed, enough trucks are assembled from the three spreads to move the camp as well as the spread's equipment in a single trip.

Personnel

The widespread operations of the several spreads are supervised personally by the two Collins brothers—Kenneth and William. The superintendent of the paving spread was Wallace McNamee, asphalt foreman was Ivan Meyer, and superintendent of the spread placing the gravel base was Jay Zimmerman. Representing the North Dakota State Highway Department was project engineer Ray Bibou. The work was done under the supervision of the Minot Division office, which has John Pearson as division engineer. The construction engineer for the department is F. H. Brasie.

THE END

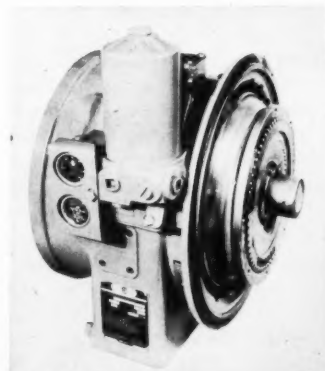
Single-stage converter for high-speed engines

■ A new 1300 Series single-stage torque converter designed for high-speed gasoline and diesel engines is announced by the Twin Disc Clutch Co. The torque converters are recommended for shovels, front-end loaders, hoisting machinery, road rollers, graders, and similar applications.

The 1300 Series converters are for engines producing from 30 horsepower at 1,450 rpm to 212 horsepower at 3,200 rpm. Specific torque ratings are 165, 200, 240, 285, and 330 pound-feet, depending on the impeller blading selected. Maximum input torque is 350 pound-feet.

The new unit features "unloading" of the engine through a blade design wherein the turbine develops a counter-head which stops fluid circulation at high speed ratios. According to the company, this simplifies construction of the converter by eliminating the need for commonly-used free-wheeled stators and removes the possibility of field failures from the use of such devices.

For further information write to the Twin Disc Clutch Co., Hydraulic Division, 1310 Preston St., Rockford, Ill., or use the Request Card at page 18. Circle No. 53.



The new 1300 Series Twin Disc torque converter.

MAY, 1957

▲ Paving keeps on the move as a Ford F700 tandem-axle truck delivers five 4,000-pound batches, or 10 tons of material to the Barber-Greene finisher working on the roadway.



Why take less when you can get...

MORE!

MORE Big Shovel Features
MORE Capacity
MORE Work and Profits

4/10 Yard
8½ Ton

at a "Small Shovel" Price

With the all new **85A "QUICK-WAY"**
4/10 Yard 8½ ton

When you can make money with a small outfit, think how much more money you can make with the husky "QUICK-WAY" 85A. Why be satisfied with a 6 or 7 tons in the ¾ yard class when you can get 8½ tons in the 4/10 yard "QUICK-WAY" 85A—and for approximately the same price.

The new "QUICK-WAY" 85A has more Big Shovel Features than any other in the small shovel field. It has been engineered to meet rugged, heavy-duty specifications with fewer moving parts. The power train is oversize, all shafts are splined for easy maintenance. Extra strength has been built in the machinery frame and gantry for greater lifting power. It has been simplified for easy, economical maintenance of all parts. It operates smoothly and quietly with maximum production and minimum operator fatigue.

The All New "QUICK-WAY" Crawlers 85AC and 105AC



Now you can get the "QUICK-WAY" 85A and 105A on a crawler! You get the same "QUICK-WAY" easily, stays with the work, even in close, restrictive quarters. The new "QUICK-WAY" Crawler has independent travel—forward and reverse speeds of ¾ miles per hour in low range and 1¼ miles per hour in high range. It is now available in 16" crawler shoes (5.1 psi ground pressure), 24" crawler shoes (3.5 psi ground pressure), and 32" crawler shoes (2.5 psi ground pressure). Width of 95" has been especially designed for hauling on trailers.

• The Most Complete Line in the Small Shovel Field with 5 Models—105A 5/10 yd., 10½ Tons—105AC 5/10 yd., 7 tons—125A 6/10 yd., 12½ Tons—with the famous money-making line of "QUICK-WAY" attachments for all models.



- SIMPLIFIED CHAIN AND GEAR DRIVE** for efficient, quiet operation—the combination of roller chains and precision machined gears gives efficient transmission of power through the minimum number of moving parts. Standard engine 47HP @ 1800 rpm.
- MAIN HOIST AND HAUL BACK DRUMS** are mounted on a single, accessible shaft with sealed anti-friction bearings. Two-piece cast laggings are easily changed. Large clutch and brake drums have separated surfaces with louvers for cooling.
- LARGE SWING DRUMS** are ribbed for cooling and are mounted on a king-sized horizontal swing shaft. Vertical swing shaft is mounted in double anti-friction bearings at top with an anti-friction needle roller bearing at bottom. One-piece, bonded brake linings provide more surface for smoother, cooler operation.
- OVERSIZE CLUTCHES** have more surface—for smoother, positive action. Hydraulically operated for easy, sure application of power, giving the operator the feel of the load at all times.
- POWER UP AND DOWN BOOM HOIST IS STANDARD.** Simple precision design makes safe, sure operation. A one-piece cast steel unit contains pawl teeth, windlass and brake drum. The cable end is located in an easily accessible place for quick attachment change-over.
- ONE-PIECE FLOOR FRAME, HEAVY DUTY SWING TABLE GEAR AND HOOK ROLLERS.** Floor frame electric welded in jig, then all bearing mounts machined at one time for precision alignment. One-piece, cast steel swing table gear. Four hook rollers distribute load.
- ALL SHAFTS SPLINED, ALL ANTI-FRICTION BEARINGS.** All shafts extra large for maximum strength, precision splined for easy maintenance. Anti-friction bearings used on all high-speed, continuous rotating shafts and drums. All shaft bearing surfaces are precision ground.
- MACHINERY HOUSING DESIGNED FOR COMPLETE, EASY ACCESS** to all machinery. New feature is an automobile hood-type cable trough cover that lifts high for complete access to central machinery. New cab has 360° vision through removable safety-glass windows.

"QUICK-WAY" TRUCK SHOVEL CO. • DENVER, COLO. Per Unit Subsidiary

GET THESE IMPORTANT BOOKS... FREE!

- ☐ The new catalog on the "QUICK-WAY" 85A and 85AC Crawler.
- ☐ The new catalog on the "QUICK-WAY" 105A and 105AC Crawler.
- ☐ The new catalog on the "QUICK-WAY" 125A.

"QUICK-WAY" TRUCK SHOVEL CO., Dept. 387
2401 East 40th Ave., Denver 5, Colorado, U.S.A.

Name _____ Title _____
Company _____
Address _____
City and State _____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 234



CONCRETE GRANDSTAND FORMS for the Indianapolis Speedway are air-blasted before concrete is placed. Nearly a fifth of a mile long, the stand has 22 rows reinforced with steel welded wire fabric and bars. It is being built under the Speedway's million-dollar improvement program by H. D. Tousley Co., Inc., Indianapolis for the 41st annual race classic this month.

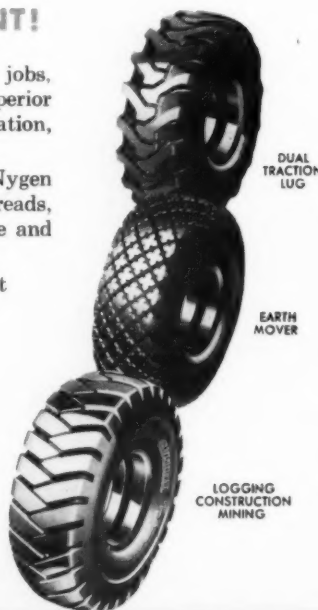


SPEED UP MOVING 6-MILLION YDS. OF DIRT FOR ALLEGHENY CONTRACTING INDUSTRIES ON HUGE \$153-MILLION INDUSTRIAL DEVELOPMENT!

Here, as on thousands of other construction jobs, General Nygen Tires are proving that superior strength *plus* crawler-like traction and flotation, gets the job done faster and *for less!*

Built with exclusive stronger-than-steel Nygen Cord and featuring extra wide, extra deep treads, Generals are unequalled for deep-down drive and dependability.

Hand General Nygen Tires your toughest assignment today and watch them save time . . . build profits!



**THE
GENERAL
TRUCK TIRE**

specify GENERALS on your new equipment

THE GENERAL TIRE & RUBBER CO. • Akron, Ohio

For more facts, use Reader-Reply Card opposite page 18 and circle No. 235

Electric plants, generators

■ Its complete line of electric plants and generators is fully detailed in a loose-leaf catalog from Graybar Electric Co., Inc. The company manufactures a complete line of gasoline and diesel powered generator sets, both portable and stationary-mounted, as well as floodlighting units.

Air-cooled gasoline electric plants with capacities of from 400 to 15,000 watts are detailed. Also described are water-cooled models with capacities of from 5 to 100 kilowatts. Air and water-cooled plants are offered in capacities of from 1.5 to 100 kilowatts. Both ac and dc sets are available.

A comprehensive line of direct-drive or belt-driven generators for all makes of engines in capacities up to 100 kilowatts is also shown. Complete specifications, as well as a detailed description and a picture are given for every unit in the catalog. One section is devoted to an explanation of how to select the proper type and size plant to meet specific and anticipated needs.

To obtain this catalog write to Graybar Electric Co., Inc., 420 Lexington Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 90.

Turbochargers for diesels

■ The use of turbochargers on diesel engines is discussed in a booklet from the AiResearch Industrial Division of The Garrett Corp. The AiResearch turbochargers are recommended for use on earthmoving equipment, trucks, stationary power plants, and wherever diesel engines are used.

The booklet details and explains the advantages of turbocharged diesel engines. Illustrations, charts and text explain how the use of a turbocharger can give a diesel engine a 50 per cent power boost. Two AiResearch turbochargers, the Model T15 and the Model T30, are described.

The descriptions include an exploded view of the turbocharger; diagrams of the side, bottom, and end views with dimensions; a discussion of the particular model's applicability and its typical performance characteristics; and a graph showing the delivery airflow in cubic feet per second for various density ratios of engines equipped with the turbocharger.

To obtain Booklet File Code G-3 write to the AiResearch Industrial Division, The Garrett Corp., 9851 Sepulveda Blvd., Los Angeles 45, Calif., or use the Request Card at page 18. Circle No. 148.

CONTRACTORS AND ENGINEERS



A 300-hp diesel engine powers the front axle and a 218-hp engine powers the rear axle of the new Euclid Model TS-24 Twin-Power overhung-type scraper. The rig has a capacity of 24 cubic yards, struck.

Overhung-type scraper powered by two engines

■ A new overhung-type scraper using two engines, each driving separate axles through separate transmissions, is available from the Euclid Division of the General Motors Corp. The Model TS-24 Twin-Power scraper has a 24-cubic-yard capacity. A 300-hp diesel powers the tractor and a 218-hp engine located in the rear serves as a built-in pusher.

Allison Torqmatic drives for each engine match a smooth flow of power to varying requirements of loading, hauling, and dumping, the company reports. The Torqmatic drive also permits changing from one of three speed ranges to another under full power without clutching.

A NoSpin differential and Euclid planetary axles in both trains give the TS-24 maximum traction during loading and heavy going, the company states. The payload capacity of the scraper is 80,000 pounds. The rig utilizes Euclid's hydraulic lever action control of all bowl, apron, and ejector operations to eliminate down time and expense caused by cable breakage. There is only 16 feet of cable on the unit.

For further information write to the Euclid Division, General Motors Corp., 1361 Chardon Road, Cleveland, Ohio, or use the Request Card at page 18. Circle No. 15.

Rubber-tire paver

■ A new bulletin from the Blaw-Knox Co. lists 23 operating features of the company's black top Model PF-45 paver. The bulletin also includes mechanical specifications for the rig.

The PF-45 is a rubber-tire machine with a hopper capacity of approximately four tons. Its paving speed is up to 62 fpm, the company reports. It can place cold or hot asphalt.

To obtain Bulletin 2539 write to the Blaw-Knox Co., Construction Equipment Division, Mattoon, Ill., or use the Request Card at page 18. Circle No. 28.

CF&I appoints two

George C. Jennings has been appointed New York district sales manager of the Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corp. He will operate from the company's executive offices in New York, N. Y.

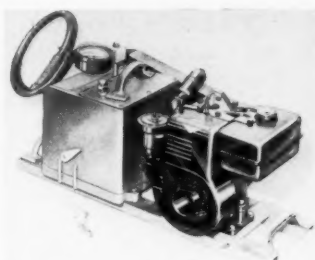
Jennings succeeds C. K. Pattison, who will handle special assignments from the Clifton, N. J., office.

Hydraulic pump runs with gasoline engine

■ A new gasoline-powered hydraulic pump is available from the Owatonna Tool Co. It is designed for use in areas where electric power is not available and the job's demands cannot be met by hand pumps.

Power is supplied by a Briggs & Stratton 4-cycle air-cooled engine developing 2 horsepower at 600 rpm. The engine has a built-in 6 to 1 gear reduction. The pump will develop a maximum pressure of 10,000 psi for intermittent service and 6,000 psi for continuous service. It will deliver 19.25 cubic inches of oil per minute for 500 rpm and is equipped with a built-in overload valve to protect the pump ram.

For further information write to



This new OTC hydraulic pump is powered by a 2-hp engine and is designed for use where electric power is unavailable.

the Owatonna Tool Co., 381 Cedar St., Owatonna, Minn., or use the Request Card that is bound in at page 18. Circle No. 141.

Short-Cuts in Paving Bridges, Approaches and Secondary Roads

The slow, tedious, costly job of paving bridges, approaches and other sections of highways and turnpikes where heavy equipment cannot successfully operate has been simplified and speeded-up by many contractors through the use of Whiteman concrete Power Buggies,* Vibrators and portable Screeding Machines.

Loading at the batching plant, hopper or truck mixer, the Whiteman Power Buggies carry their full 13 cu. ft. of concrete at a fast clip along narrow runways, over light falsework, under low overheads, up steep grades. Dumping is fast and accurate. Unlike hand buggies, they never tire or slow down. One man with a Power Buggy can pour as much concrete in a day as five men with hand equipment.

Vibrating is accomplished quickly, thoroughly with heavy duty, rugged Whiteman vibrators on wheelbarrow bases.

Smooth, level screeding is done in record time with the portable Whiteman Screeding Machine. Quickly adjustable for slabs from 3' to 24' wide. Puddles and vibrates the concrete throughout the entire depth and area, thoroughly compacts the slab. Heavier aggregates remain in suspension, resulting in a superior, far more durable slab.

For complete information on Whiteman concrete equipment, call your Whiteman Distributor or write: Whiteman Manufacturing Company, 13020 Pierce St., Pacoima, California.

*Trademark

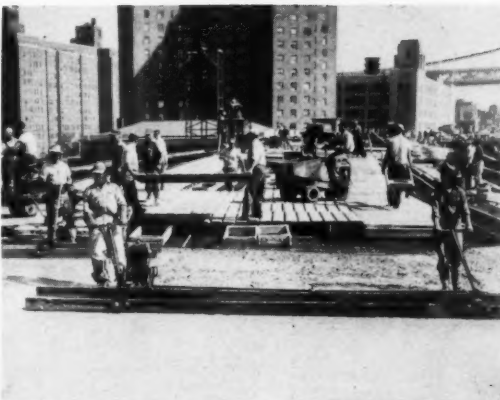
Whiteman



Light falsework on freeway overpass in Los Angeles precluded use of heavy equipment. Whiteman Power Buggies carried concrete from mixer-fed hoppers over portable runways, completed pour in record time.



A full 23 ft. width is screeded to a perfect level on approach pavement to Mackinac Straits Bridge by Whiteman Screeding Machine. Telescopic frame adjusts for widths from 3 ft. to 24 ft. Results are equal to larger equipment.



215 yards of concrete per day were poured high above heavy traffic on New York Elevated Highway job. 4 Whiteman Power Buggies operated on portable runways. 2 Whiteman Screeding Machines covered 37½ ft. width.

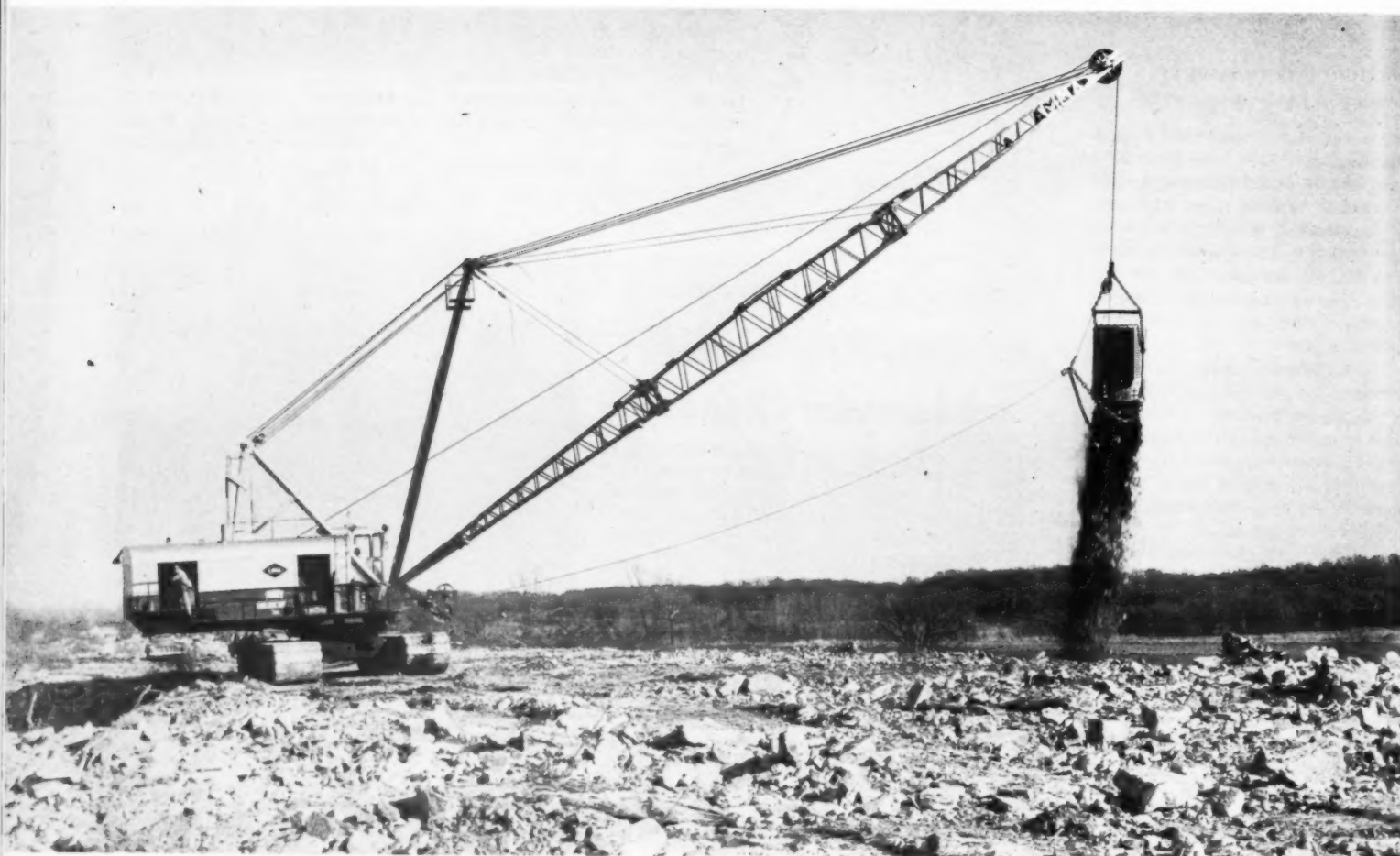


On bridge section of new U. S. Highway 79 in Arkansas, Whiteman Power Buggy delivers a load of concrete. Contractors have found these tireless workers really speed up the job, save valuable time and cut costs.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 236

By RALPH MONSON
field editor

Big draglines dig rock to widen Cal-Sag Canal



One of the first jobs in widening the channel from 60 to 225 feet was to move spoil banks from the original canal excavation 200 to 300 feet back. This Lima Model 2400 dragline with 120-foot boom and Hendrix 7½-yard dragline bucket moves some of the material in one handling.

Once the old spoil bank had been moved back, the overburden removed, and rock drilled and blasted for channel excavation, the Lima 2400 goes to work excavating rock from the channel bed.



This welder repairs one of the Hendrix buckets, used by the Lima to excavate the tough limestone rock. Power is supplied by a Hobart 250-amp welding generator in the back of the pickup.



Excavation of 2 million yards of overburden well along, workmen assemble the new Page Model 723 walking dragline that will handle part of the earth and rock excavation with its 140-foot boom and 9½-yard dragline bucket.

Tractor-mounted, mobile drill rigs put down deep holes swiftly; drill barge handles underwater drilling on western part of job

Highly mobile, tractor-mounted drill rigs and big draglines are the basic equipment being used by Mary Construction Co., Cape Girardeau, Mo., to move 2 million cubic yards of overburden and more than a million cubic yards of ledge rock on the Calumet-Sag Canal project.

This \$1,876,000 contract for a 3-mile section is the first phase of the program for enlarging the canal, which joins the Illinois-Mississippi River Waterway with the Great Lakes-St. Lawrence system just south of Chicago.

The quantities alone suffice to make this a big job, but there are other things that make the job difficult. One of these, from the contractor's standpoint, concerns making a profit on a job that was bid 46 per cent below the engineers' estimate.

But making a profit is exactly what the Mary Construction Co. crews plan to do, and they are overcoming any obstacles that arise. The job is now well ahead of schedule, and the contractor is looking forward to successful completion of the contract well in advance of the March, 1958, deadline.

Planned by the Chicago District of the U. S. Army Corps of Engineers, the Cal-Sag improvement program calls for the widening and deepening of a 16.2-mile length of the canal from its junction with the Illinois River Waterway to Blue Island and slightly more than 25 miles to the big new Lake Calumet Harbor. The channel will be widened from its present 60 feet to 225 feet and will have an average depth of 11 feet.

The complete project, estimated to

cost \$188 million, includes the raising, lengthening, and reconstruction of a number of highway and railroad bridges, and the construction of a new lock in the Calumet River. Succeeding phases of work will be scheduled as rapidly as appropriations are made by Congress.

Keep canal traffic moving

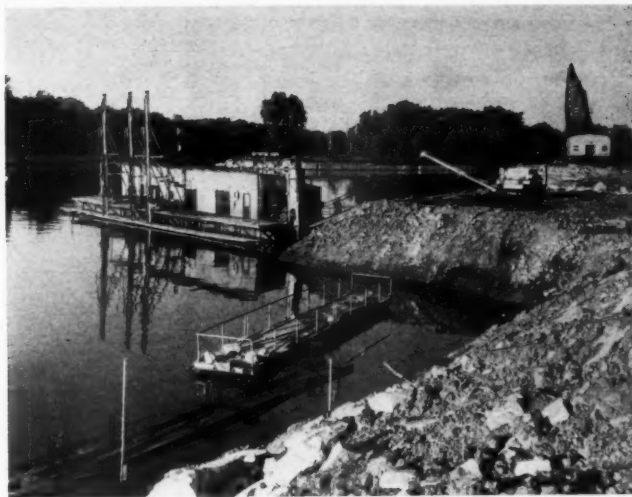
The principal items in the Mary Construction Co. project are the removal of overburden down to the limestone bedrock and the excavation of the rock to a minimum of 13 feet below water level. The north wall of the old canal is being left in place to form the north wall of the widened channel. The concrete wall on the south side is being removed, and the widening extends to the south.

During much of the season, there is a steady flow of barge traffic in the existing canal, and this traffic has to be maintained while the widening is being done. This means that the blasting and dredging operations must be done with great care and precision.

By September, 1956, the firm had moved 2 million cubic yards of overburden, a substantial part of which consisted of the old spoil bank of rock and earth that had been excavated during construction of the original canal. This material had to be moved back 200 to 300 feet to make room for the widening and the new spoil bank.

Since big draglines were the key to the contractor's plan for widening the channel, a Lima Model 2400 dragline was moved in early in the job to cast

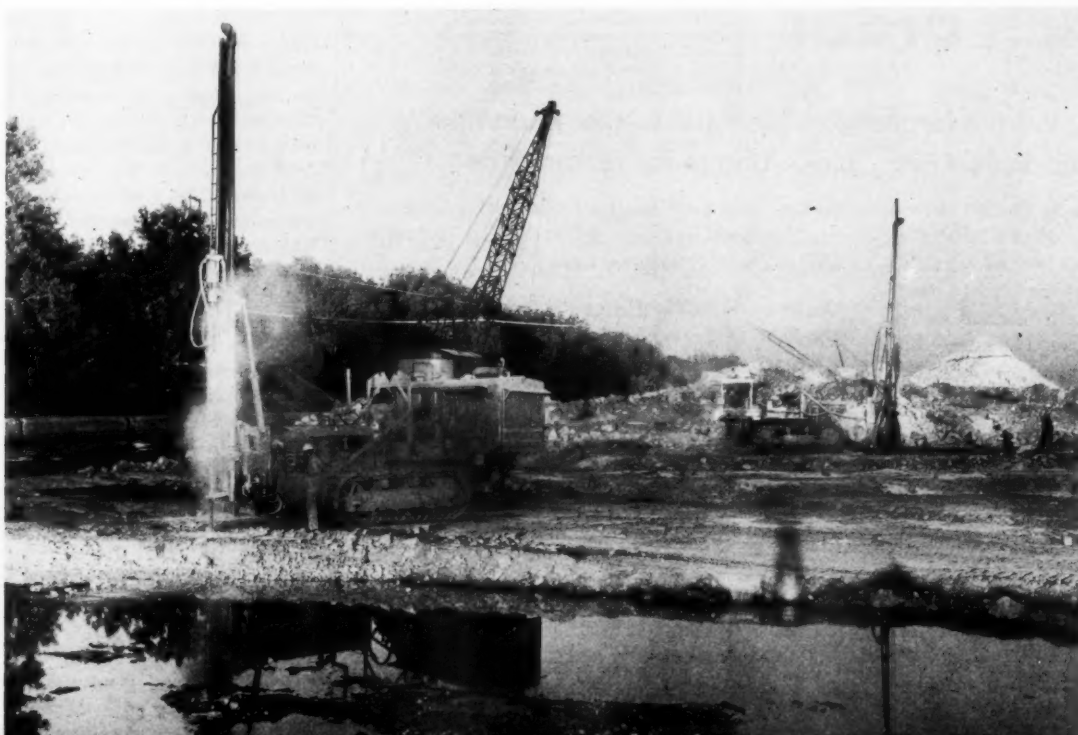
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This drill barge Wasp, mounting three Gardner-Denver Model 123 drills with 26-foot towers, gets ready to work where rock dips below water level at the junction of the Cal-Sag and Chicago sanitary ship canal. The Page dragline, right, is stripping rock from the channel.



One of the tractor-mounted drills putting down holes for the rock excavation is this Joy Challenger, mounted at the front of a Cat D7 and being powered by a Gardner-Denver 600-cfm compressor mounted crosswise on the rear of the tractor.



Working near the D7-mounted Joy Challenger is a similar drill, mounted on a Cat D8 and being supplied with air by an Ingersoll-Rand 900-cfm compressor on the rear of the tractor.



Though clearing was not a major item in the contract, there were some large trees and plenty of brush and vines to be removed. Two men use a McCulloch Model 99 two-man chain saw to fell this large tree.

(Continued from preceding page)

this spoil bank back. The big Lima with 120 feet of boom and a Hendrix 7½-yard dragline bucket is powered by a Caterpillar D397 engine. It was able to move some of the material into final position in a single handling, while some had to be recast once.

As soon as it had moved the old spoil bank, this dragline began the excavation of the earth overburden, casting this material to the new spoil bank in the same manner. A dragline with a Hendrix 3½-yard bucket also helped on this phase.

In areas where there was little or no rock in the overburden, a pair of tractor-dozers did the stripping. One of these was a Caterpillar D9 and the

other was a D8. The D8, equipped with a U-dozer, moved a lot of material even on the long moves of 300 feet or more. These two tractor-dozers, together with a Caterpillar D7, also serviced the draglines, building access roads and cleaning up spillage.

The biggest machine on the job was a new Page Model 723 walking dragline, which was assembled on the job site. The big Page with 140 feet of boom and a 9½-yard Page dragline bucket handled a large part of the earth and rock excavation. Powered by a six-cylinder Page diesel engine, the dragline has air controls and electrically powered swing.

Use tractor-mounted drills

The top of the limestone ledge rock is above the water level on the eastern two miles of the project. On this section, the overburden was removed right down to the rock surface before drilling and blasting operations began.

A high rate of drill-hole production was necessary to match the capacity of the big excavating machines. The drill holes had to go deep—as much as 24 feet—since the contractor's plan called for blasting the entire depth in one shot. The combination of high production and deep holes, together with the need for mobility over the rough terrain of the job, led to the selection of a group of tractor-mounted drill rigs.

The first on the job was a Joy Challenger drill with its 26-foot folding tower mounted on the front end of a Caterpillar D7 tractor. Air for the operation of this drill was supplied by a Gardner-Denver 600-cfm rotary compressor mounted crosswise on the rear of the tractor. Using Joy 3½ to 4½-inch carbide-insert bits, this rig drills to a depth of 26 feet in very short order, and without changing steels. The completely self-contained unit, extremely mobile, is able to travel over any terrain the tractor can navigate.

The D7-mounted Challenger drill handled much of the drilling in the early stages of the job for drainage ditches and other miscellaneous work. When the drilling of the ledge rock started, a second rig was brought in. This was a Caterpillar D8 tractor carrying two Gardner-Denver DH123 drills suspended from a side boom. An Ingersoll-Rand 900-cfm Gyro-Flo compressor, which supplied air to both drills, was mounted on the rear of the tractor.

This rig is able to drill two 3½-inch holes simultaneously. While the towers are only long enough for 12-foot steels, the coupling of additional 12-foot steels can be done quickly to run the holes as deep as 24 feet. This rig is also completely self-contained, and can go practically any place a tractor can travel.

A third tractor-mounted rig included a Joy Challenger drill and an Ingersoll-Rand 900-cfm Gyro-Flo compressor mounted on a Caterpillar D8 tractor. Except for the fact that the tractor and compressor are



Drivers get set to "hit the road" with the first of the 1000 new Power Giants ordered by Ryder System, Inc.

Dodge awarded 1000-truck order

Ryder System, Inc., world's largest exclusive truck-leasing company, puts low-cost operation first...picks Dodge for record order

When your business is leasing trucks, there's only one way to make it pay off. And that's by keeping your operating costs per mile at rock-bottom levels. That's why Jim Ryder, president of Ryder System, Inc., decided on Dodge when he needed new trucks. He knew that Dodge trucks are built to take extra miles without extra costs.

For instance, new Dodge Power Giant V-8's are the most powerful of the low-priced three. And that extra power lets you handle the roughest hauling jobs with less engine strain. Less strain means less wear and, of course, fewer repairs. Exclusive Power-Dome design delivers premium performance on regular gas, too. "I save money both ways", says Jim

Ryder. "But more important, I know that my customers will be thoroughly satisfied with any Dodge Power Giant they lease."

Why not do as Jim Ryder did... check into the facts with your Dodge dealer. You'll find a Dodge Power Giant will pay off for you, whatever your business.

DODGE

PowerGiants

Most Power of the Low-Priced 3

For more facts, use Reader-Reply Card opposite page 18 and circle No. 237



"We picked these Dodge Power Giants to give our truck-lease customers the finest hauling and delivery operation at lowest cost", James Ryder (right), president of Ryder System, Inc., tells Lee F. Desmond, vice president of Dodge.



Job superintendent William Jordan relays information to one of his foremen in pickup in a remote section of the job via a Motorola mobile radio in his Chevrolet pickup.

This bulletproof magazine, one of two at the site, provides storage for 20,000 pounds of dynamite. It has double 5/8-inch steel walls, 6 inches apart, lined with 2 inches of hardwood. The embankment affords additional protection.



larger, this rig is similar to the first.

Drill 6 feet below grade

The rigs drill a series of holes in a pattern ranging from 8x11 feet to 12x14 feet. All of these holes are overdrilled to a depth of 5 to 6 feet below the required finished grade of the canal bottom. This insures good breakage of the rock at least down to required grade so that underwater trimming will not have to be done later.

Blast holes are loaded with Atlas, Hercules, and Du Pont 40 per cent dynamite and detonated with electric caps using delays of 0 to 10 for maximum effectiveness. The usual shot of some 100 holes requires approximately 10,000 pounds of dynamite and produces close to 15,000 cubic yards of well-fragmentized rock.

As soon as a shot is fired, one of the big draglines moves in and begins excavating the rock, casting it on the huge spoil banks to the south of the canal. Because of the overdrilling and carefully planned and executed shots, the rock is well broken, and the draglines have little or no trouble excavating down to grade.

On the westerly portion of the job, the top of the rock dipped down below the water level. In fact, for the westerly 2,000 feet of channel, the top of solid rock ran from 0 to 3 feet above the finished channel bottom, or 9 to 12 feet below water.

It was the contractor's original plan on this section to strip the overburden down close to water level, then drill down through the earth and rock for blasting. With this method, all of the drilling could have been done with the tractor-mounted drills, and no underwater drilling would have been necessary.

Use drill barge

But the presence of pockets of sand and many large boulders in the overburden made this method of drilling impractical, and a new plan had to be devised. The work is actually started by the Page dragline, which strips the overburden right down to bedrock under water, and then drilling is done with floating equipment.

The drilling rig is the drill barge Wasp, a 26x100-foot barge that carries three Gardner-Denver Model DH123 drills. The drills are mounted on rolling carriages along one side of the barge, an arrangement that permits spotting them at any point along the length of the barge.

The barge is positioned by two anchor lines operated by air-powered hoists. One line is attached to an

(Continued on next page)

TROJAN....

STANDS OUT ON THE TOUGH JOBS!



... TROJAN owners never hesitate to tackle the tough jobs! On difficult landclearing, digging in rocky, dry soils or working with extra heavy materials they know that the power, stamina and balanced design of their machines will always permit an honest day's work... So many "extras" are standard with TROJAN and so many useful operating features are built into every machine that we'll gladly demonstrate against any comparable model—any place and any time... Make a date with your TROJAN distributor!



EVER WORK IN MOIST SAND? ... Look how this TROJAN heaps the bucket yet remains perfectly stable without any tendency to tip at any point in the lifting cycle... Big tires give full traction and flotation to work at high speeds.

Check This List of Important TROJAN Features

Reverse Curve Safety Arms
Straight Line Horizontal Thrust
Independent Bucket Action
Low Load Carrying Position
Allison Torqmatic Transmission

Detroit Timken Full-Floating Axles
GM Diesel Engine Available
Self-Centering Finger Tip Controls
Box Welded Frames
No Stopping to Shift

Foot Clutch Eliminated
Shift Easily at Full Throttle
Fastest Time Cycle
Standard 90" Bucket Spans Wheels
Bucket Position Indicator



TROJAN

YALE & TOWNE

TRACTOR SHOVELS

2 & 4 Wheel Drive Front-End Loaders

AD NO. 44-83

CONTRACTORS MACHINERY DIV., THE YALE & TOWNE MANUFACTURING COMPANY, BATAVIA, NEW YORK; SAN LEANDRO, CALIFORNIA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 238

(Continued from preceding page)

anchor out in the channel and the other to a Caterpillar D8 tractor on the shore. The use of the tractor for a moving anchor aids in quick and accurate spotting of the barge. Once spotted, the drill barge is secured by two steel spuds operated by the same hoists that handle the anchor lines.

In an enclosure on the deck of the barge are two Sullivan 700-cfm air compressors that provide air for the operation of the drills and winches. Each compressor is driven by a Murphy diesel engine.

The three drills on the barge have 26-foot masts, which make it possible to drill the full depth without changing steels. After holes have been drilled with 3½-inch bits to a depth of 5 feet below the finished channel bottom, they are loaded through pipes with 40 per cent gelatin dynamite and fired with Primacord.

After a shot, the Page dragline with its 9½-yard rock bucket excavates the rock to the required depth, casting the material to the spoil bank. The two big draglines are kept in operation 24 hours a day, 6 days a week. Drilling crews using the tractor-mounted drills work two 8-hour shifts, 6 days a week. The drill barge is operated on a single 8-hour shift.

With the large volume of rock blasting on this job, large quantities of dynamite and caps have to be stored on the job site. Since the project is located near the intersection of two highways and the site is easily accessible to the public, the contractor is using two bullet-proof steel magazines—one holding 20,000 pounds of dynamite and the other 5,000 caps—to provide safe storage for the explosives.

The magazines have double walls of ¾-inch steel plate with a 6-inch space between the walls. Inside, they are lined with 2 inches of hardwood. Each door is fitted with four locks that have non-sawable latches. Storage facilities are surrounded by a high earth embankment as an additional safety precaution.

Personnel

This highly mechanized project requires a minimum number of workmen, but does call for very careful planning and supervision. The overall planning and general supervision of the work is in the hands of general superintendent Irvin Garms. He is assisted by job superintendent William Jordan and a carefully selected staff.

These men make very good use of their Motorola mobile radio system to keep the job operating at top efficiency. Units of the system are located in the field office, the two big draglines, and pickups of three of the supervisors.

Representing the Chicago District of the Corps of Engineers on the project are Lynn S Kreger, resident engineer; Sidney D. Drew, office engineer; and Ralph Purcell, administrative assistant. The District Engineer of the Chicago District of the Corps is Col. J. B. W. Corey, Jr.

THE END

Vibratory soil compactor gives double the impact

■ A self-propelled one-man-operated vibratory soil compactor that is said to produce twice the impact of any comparable machine is available from Vibro-Plus Products, Inc. The Model CM20 Terrapac delivers a 6,600-pound impact 2,000 times per minute. Self-propelled speeds up to 75 fpm are possible under normal operating conditions, the company reports.

According to the manufacturer, the compactor handles all types of fills; maneuvers close to abutments, retaining walls, or pilings; and is ideal for backfill jobs, road patching or shoulder work, floors, and foundations.

The vibratory element is mounted



The Vibro-Plus Model CM20 Terrapac delivers a 6,600-pound impact 2,000 times per minute and travels at speeds up to 75 fpm under normal conditions.

in the 34×20-inch base plate with the gasoline engine mounted on a platform insulated from vibration by four springs. Power is delivered through a

V-belt drive. A centrifugal clutch permits the engine to idle without engaging the vibratory element.

For further information write to Vibro-Plus Products, Inc., Stanhope, N. J., or use the Request Card at page 18. Circle No. 50.

I-H names division manager and appoints sales manager

Ralph M. Buzard has been appointed general manager of the Motor Truck Division, International Harvester Co., Chicago, Ill. Buzard, formerly sales manager, is succeeded by Louis W. Pierson.

William E. Callahan, formerly the eastern region sales manager, has been promoted to the position of assistant sales manager.

Cutting Man-Hours

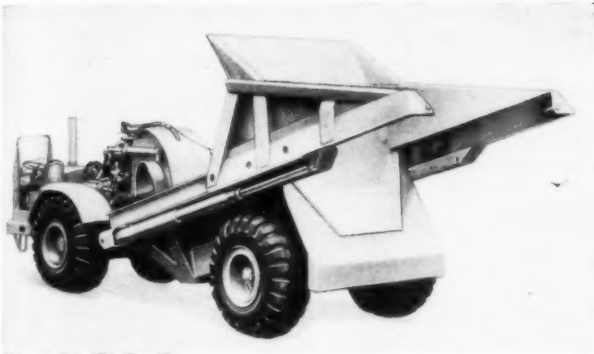
Here's a Homelite Dual-Voltage Generator in action . . . working for profits two ways. One man is operating time-saving universal power tools. And at the same time, one man . . . not three men . . . just one man is operating a Homelite High-Cycle Concrete Vibrator on the forms. The power for both comes from one lightweight, carryable generator. The savings in man-hours are yours. A Homelite man will give you an on-the-job demonstration. Or write for full information.

HOMELITE
A DIVISION OF TEXTRON INC.
5905 RIVERDALE AVE., PORT CHESTER, NEW YORK
MANUFACTURERS OF CARRYABLE PUMPS
GENERATORS • BLOWERS • CHAIN SAWS



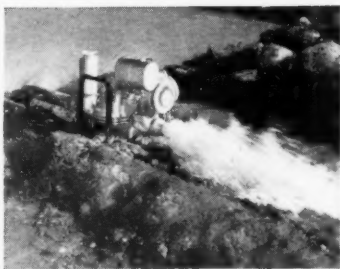
For more facts, use Reader-Reply Card opposite page 18 and circle No. 239

CONTRACTORS AND ENGINEERS



The Athey PE21 hydraulic rear-ejecting trailer has a capacity of 31 tons and an ejection force of up to 200,000 pounds. It is towed by a Cat DW21.

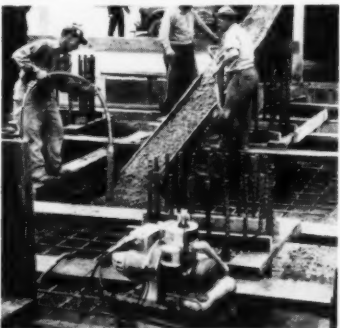
Full Line of Carryable Construction Equipment Now Offered by Homelite



Carryable Diaphragm Pump . . . This self-priming, 120 pound diaphragm pump will handle water in the thickest sand, muck, or mud. Capacity: 5,000 g.p.h. Size: 3". Complete line of centrifugal pumps are also available in sizes from 1½" to 3".



Chain Saws For Every Job . . . Now you can choose from a full line of lightweight, powerful Homelite chain saws. From 3½ to 7 horsepower . . . 19 to 29 pounds. Brush cutting and clearing attachments are available to handle all your cutting jobs.



One-Man Electric Vibrator . . . It takes only one man to place concrete with powerful, Homelite high-cycle or universal electric concrete vibrators. Carryable Homelite generator provides power for high-cycle vibrators and 110 volt DC for all universal vibrators, tools and floodlights.

HOMELITE
a division of Textron Inc.
PORT CHESTER, NEW YORK
For more facts, circle No. 240

MAY, 1957

Ejection-type trailer has 31-ton capacity

■ A new hydraulically - controlled ejection trailer with a capacity of 31 tons and an ejection force of up to 200,000 pounds is available from the Athey Products Corp. The PE21 rear-ejecting trailer is recommended for dumping sticky hard-to-discharge materials, for complete ejection control when spreading the load, and for partial-load ejection into less-than-trailer-capacity hoppers or crushers.

The PE21 is designed to be towed by a Caterpillar DW21 tractor. A tractor-mounted hydraulic pump, operated from the rear power takeoff, furnishes power to two hydraulic rams mounted on the sides of the trailers. The rams move the ejector plate to the rear, ejecting the load. The rams are double acting, to insure the return of the ejector plate to the carry position.

The ejector is carried on roller bearings and is retained in alignment with the trailer body throughout the entire cycle. The ejector guides, rollers, and actuating cylinders are protected from the load and the impact of the loading shovel.

For further information write to the Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 7.

Wire rope folder

■ A comparison table of the breaking strengths of various types of wire rope is included in a folder on CenterFit wire rope available from the Jones & Laughlin Steel Corp.

The folder also includes recommendations for applications of CenterFit on various kinds of earthmoving equipment. According to the company, CenterFit is the strongest standard wire rope produced.

To obtain this folder write to the Jones & Laughlin Steel Corp., CenterFit Wire Rope Division, Muncy, Pa., or use the Request Card at page 18. Circle No. 153.

Crawford joins Foster

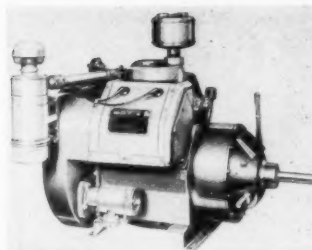
Robert F. Crawford has joined the Pittsburgh, Pa., office of the L. B. Foster Co. as a specialist in pipe sales. He was previously a pipe salesman for Chandler-Boyd Co., pipe wholesaler.

The action coincides with the addition of stainless pipe, alloy pipe, and valves to Foster's line of pipe supplies.

Air-cooled 56-hp engine added to company's line

■ A new air-cooled gasoline engine rated at 56 horsepower at 2,200 rpm has been added to the line of power plants manufactured by the Wisconsin Motor Corp. The V-type four-cylinder Model VR4D has a basic high-torque design for load-holding ability when handling intermittent, variable loads or when engaged in continuous, constant-load service, the company reports.

Features include Stellite exhaust valves and valve seat inserts, used with positive-type valve rotators; tapered, self-cleaning, main roller bearings used on both ends of the crankshaft; a rotary-type outside magneto; positive oil lubrication; and

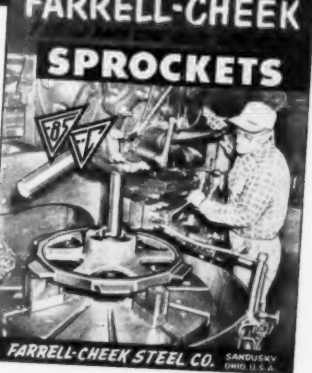
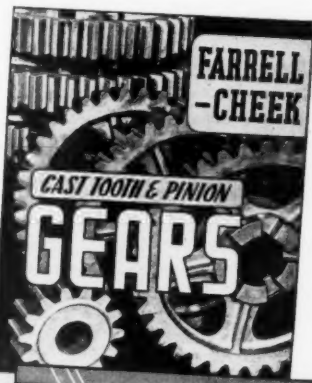


Newest member of the Wisconsin line is the Model VR4D V-type four-cylinder air-cooled engine rated at 56 horsepower at 2,000 rpm.

efficient air cooling to 140 degrees F.

For further information write to the Wisconsin Motor Corp., 1910 S. 53rd St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 140.

IMPORTANT LITERATURE



Please Select and Write
**FARRELL-CHEEK
STEEL COMPANY**

SANDUSKY, OHIO

Finest Name in Cast Steel!

For more facts, use Reader-Reply Card opposite page 18 and circle No. 241



The Browning Model SPR-4 road roller has a split steel wheel in front and pneumatic tires in the rear. It has a ballasted gross weight of 26,050 pounds.

Roller combines tires with split steel wheel

■ A self-propelled road roller with a split steel wheel in front and pneumatic tires in the rear is available from the Browning Mfg. Co. The Model SPR-4 weighs 8,400 pounds and has a ballasted gross weight of 26,050 pounds.

The split steel wheel is 60 inches long and 34 inches in diameter. A bolster assembly consisting of five 7.50x15 pneumatic tires is available to convert the Model SPR-4 into a complete rubber-tire unit.

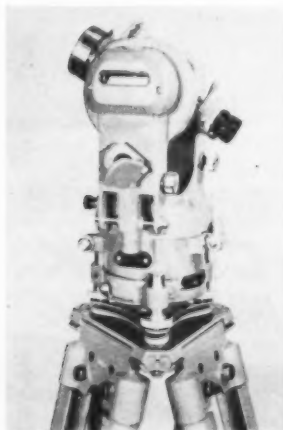
For further information write to the Browning Mfg. Co., 111 Humble Ave., San Antonio 6, Texas, or use the Request Card at page 18. Circle No. 113.

Transit repeating clamp eliminates plate motions

■ An optical transit designed for ease and speed of operation is available from Wild Heerbrugg Instruments, Inc. The Wild T-16 optical transit has a new optical plummet which gives an upright image.

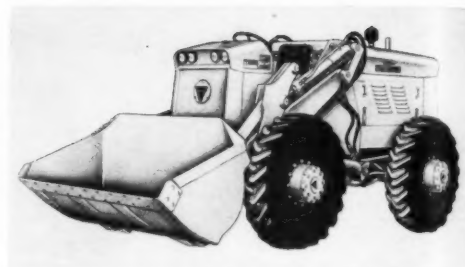
Circles on the T-16 are read at a glance to minutes and to 20 seconds by interpolation. A built-in repeating clamp for setting on zero eliminates lower plate motions. Optional attachments include a battery box for illumination of circle readings, horizontal and collimation level vials, and a telescope reticle.

For further information write to Wild Heerbrugg Instruments, Inc., Main and Covert Sts., Port Washington, N. Y., or use the Request Card at page 18. Circle No. 154.



The Wild T-16 optical transit is designed for ease and speed.

The new TL-20D Tracto-Loader features one-lever power shift and direction control. Its bucket capacity is 2 cubic yards.



Front-end loader travel controlled by one lever

■ A front-end loader on which one lever is used to select any of three speeds in either direction is announced by the Tractomotive Corp. The TL-20D Tracto-Loader has a

bucket capacity of 2 cubic yards and features four-wheel drive.

Top travel speed of the new loader is 23 mph. Power is provided by an Allis-Chalmers diesel engine develop-

Semi-Automatic Hard-Facing

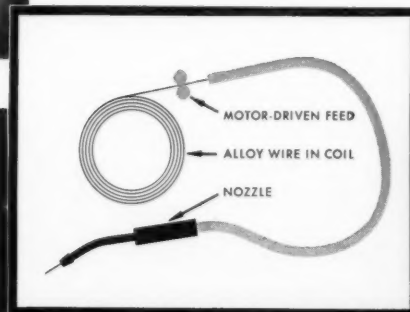
with STOODY WIRES

Takes the work out of welding — speeds application — cuts overall costs!



How Stoody Semi-Automatic Hard-Facing Works

Stoody Wires are supplied in layer-wound coils for use on any automatic welding machine, with minor conversions. The wire is mechanically fed to the nozzle by a motor-driven feed roll and idler roll which are actuated when the arc is struck. The welder thereafter merely directs location of the weld deposit, the machine feeding the wire automatically as the arc is struck, stopping when the arc is broken.



ing 100 horsepower at 2,000 rpm. It has a 24-volt electrical system with an electric starter and an ether dispenser for starting in cold weather.

The 21,000-pound rig has a bucket that can be tipped back 40 degrees at ground level. Maximum power is transmitted to the bucket through the use of a straight-line linkage. The dump cylinders are located well away from the bucket and are not exposed to the material being handled.

Maximum dumping clearance under the hinge pin is 11½ feet. Under the bucket cutting edge the clearance is 9 feet. Reach from the forward-most part of the machine to the cutting edge at maximum dumping height is 34 inches.

For further information write to the Tractomotive Corp., Deerfield, Ill.,

or use the Request Card at page 18. Circle No. 93.

Tractors, attachments

■ A booklet from the Work Bull Division of Massey-Harris-Ferguson, Inc., describes the five Work Bull tractors in the M-H-F family and their 20 interchangeable attachments. The literature describes how each unit is engineered to provide "big builder" road gear flexibility for the small roadbuilder budget, and added economy and flexibility for the major road construction firm.

To obtain this literature write to the Work Bulls Division, Massey-Harris-Ferguson, Inc., 12-L Quality Ave., Racine, Wis., or use the Request Card at page 18. Circle No. 25.

The Universal Transmix utility mixer is dumped hydraulically direct to the forms.



Tractor-mounted mixer dumps directly to forms

■ A transporting-type mixer that hydraulically dumps direct to the forms is available from Universal Pulleys Co., Inc. The Transmix utility mixer is attached to the back of a three-point tractor hitch. The barrel is

turned by friction from a power take-off extension to a standard 6.70×15 tire which is attached to the barrel's bottom.

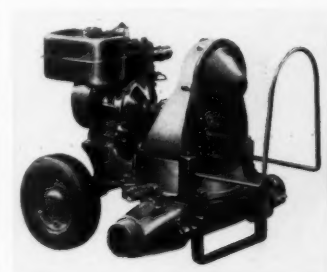
The mixer is dumped by the tractor's hydraulic arms. It mixes or dumps while the tractor is moving or while it is stationary. The barrel is fabricated of ¼-inch plate and is 28 inches in diameter and 42 inches long. The Transmix Utility mixer is available to fit Ford, Ferguson, Oliver, Allis-Chalmers, Case, International Harvester, John Deere, and Fordson Major tractors.

For further information write to Universal Pulleys Co., Inc., 330 N. Mosley, Wichita, Kan., or use the Request Card at page 18. Circle No. 116.

Lightweight diaphragm pump weighs 125 pounds

■ A 3-inch portable diaphragm pump that weighs only 125 pounds has been added to the Humdinger line of pumps manufactured by the Ralph B. Carter Co. The Model 3ADF is rated at 4,200 gph, and is powered by either an electric motor or a gasoline engine.

The pump body and housing are cast of high-strength aluminum alloy.



The design of the body allows full displacement action of the diaphragm, the manufacturer states, resulting in top capacity on every stroke. Engine power is transmitted to the totally enclosed drive through a shock-absorbing flexible coupling. A sealed housing protects against dirt.

A spring-cushioned connecting rod eliminates strain, shock, and wear through its absorptive cushioning effect, according to the company. The full-swing check valves are made of Neoprene compound and are designed with oversize weights to insure positive seating on every stroke. Fillings are available in 2 and 3 inch IPS suction and discharge.

For further information write to the Ralph B. Carter Co., 192 Atlantic Ave., Hackensack, N. J., or use the Request Card at page 18. Circle No. 125.

Hard-Facing

semi-automatic hard-facing with Stoddy Tubular Wires is one of the greatest labor-saving processes yet developed for the maintenance man! Shuttles you through jobs at speeds 2 to 4 times faster than manual welding. Wires are bare, need no flux or flux dams. Deposits are thus fully visible during welding...easy to lay along an edge or in a mark.

With Stoddy Wires you get low penetration, means less dilution and, consequently, a higher wire content in the final deposit. Wear resistance is thus improved...usually superior to manual electrodes of similar analysis.

Finish on the wire is clean and bright, free from burrs and slivers, insuring smooth feed through the machine. Because the wires are drawn through special sizing dies after being formed they are concentric, true to diameter and uniform throughout their length. Special chemically coated papers protect against rusting and the fibreboard shipping container insures all shipments arriving undamaged, ready for use.

When you load your first coil of Stoddy Wire you'll find the nylon wrapping especially handy—heavy wires or straps to remove, yet the wire is coiled till you're ready to weld!

Remember, with Stoddy you get a complete range of proven, time-tested wires, from low alloy to high alloy types, plus a tungsten carbide...all backed by 10 years use in the field!

Nickel Manganese and Stoddy 121 Wires are available in 3/32" or 7/64" O.D. Other alloys in 7/64" diameter only. All Stoddy Wires feed through most semi-automatic machines with only minor changes in wire guides, feed rolls and nozzle.

For more information see your nearest Stoddy dealer, 600 of them, in all parts of the U.S. and Canada (check the Yellow Pages of your phone book) or write direct.

Stoddy 100

Applications... Crusher rolls, impellers in impact type crushers, bucket teeth and lips, scarifiers and rippers, tool joints, cement mill pulverizer rings and loader lips

Stoddy 100HC

Applications... Catalyst piping, Banbury mixers, crushers and parts subject to severe abrasion

Stoddy 102 (for submerged arc application only)

Applications... Cable sheaves, small diameter shafting, shovel idlers and equipment subject to high compressive loads

Stoddy 104

Applications... Designed primarily for build-up of carbon and low alloy steels

Stoddy 107 (for submerged arc application only)

Applications... Crane wheels, house rollers, mine car wheels, tractor and shovel parts subjected to severe impact

Stoddy 108

Applications... Sprockets, shovel idlers and pads

Stoddy 121

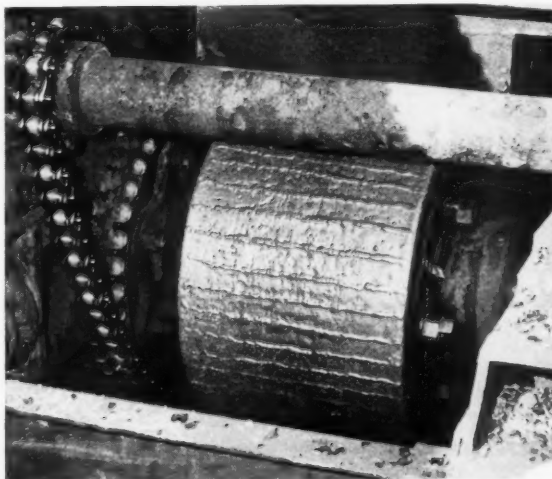
Applications... Crusher rolls, impellers in impact type crushers, bucket teeth and lips, scarifiers and rippers, cement mill pulverizer rings, loader lips

Stoddy 130

Applications... Earth boring and scraping operations on equipment such as tool joints, augers, conveyor flights, scraper blades, rippers and concrete mixer paddles

Stoddy Nickel Manganese

Applications... Strength welding and rebuilding of manganese parts



STODDY COMPANY

11936 East Slauson Avenue
Whittier, California

For more facts, use Reader-Reply Card opposite page 18 and circle No. 242

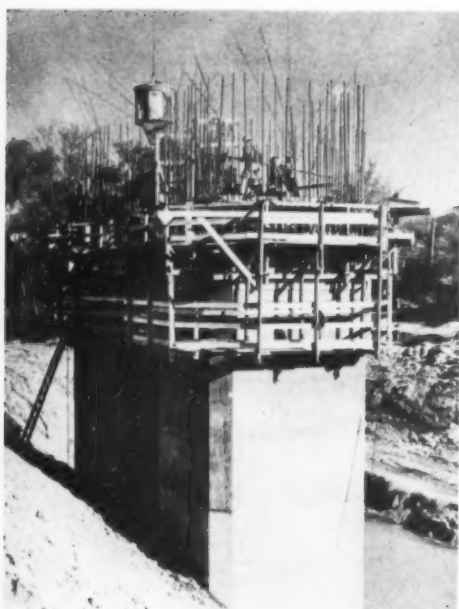


As the pier goes higher, out of reach of the 130-foot boom and 20-foot jib of the P&H, a bucket of concrete is raised to the form by a Clyde two-drum hoist. The Winslow Binanbatch plant, right, supplies 4-yard loads to Challenge mixers that deliver concrete to the base of the pier.

Four tall pier shafts built with slip forms in 16 weeks

Re-forming for smaller upper sections takes 12 hours; tallest pier, 210 feet high, is topped out in 400 hours

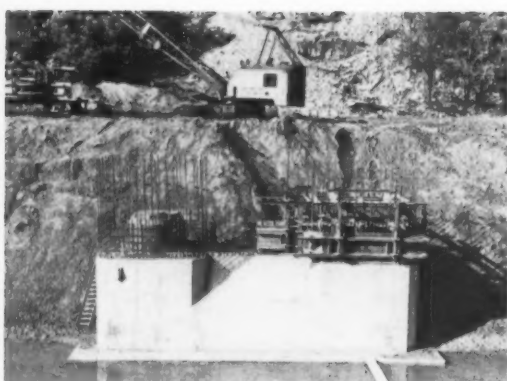
by BILL ALLEN, field editor



A crane with Gar-Bro bucket handles the early pours. The lower platform is used by workmen who finish the concrete with wood floats. Just above it is the 4-foot-high plywood form. The structure is strengthened by the yoke, which is made of two frames, one above the other, connected by vertical wales.

Kimberling Bridge, which will carry State Route 13 across the White River in Missouri, replaces the existing structure that will be flooded by the reservoir of Table Rock Dam. C. W. Davis of Fort Worth, Texas, is the consulting design engineer for the slip forms used by crews of Guy H. James Construction Co., Oklahoma City, Okla., in constructing the bridge piers. The bridge design for the U. S. Army Corps of Engineers is by Sverdrup & Parcel, St. Louis, Mo.

(Article on facing page)



Workmen assemble a slip form that will be used for the rest of the pier. The prefabricated parts of the form are transferred from the trailer to the base of the pier by a crane.



On the deck of the slip form, 172 feet above the footing, workmen prepare a pour for the final section of the pier. The 16 to 20 conventional screw-type jacks that fit between the double 5-inch channels of the yoke are operated individually.



Swung over a wooden chute by the Chicago boom, a Gar-Bro 1/2-yard bucket is emptied by workmen atop the pier. The chute distributes the mix in the form.

CONTRACTORS AND ENGINEERS

The American crane makes ready to continue concrete pouring operations on a pier near the abutment as slipforming continues on one of the tall piers in the valley.



Making efficient use of slip forms, the contractor on the Kimberling Bridge near Branson, Mo., completed the four high piers of the span in less than 16 weeks. The method not only speeded up the entire job, but also provided safer working conditions for the men.

This relocation of the existing bridge across the White River on State Route 13 is made necessary by the reservoir that will be formed by Table Rock Dam, which is now under construction. Designed by Sverdrup & Parcel of St. Louis, Mo., under the supervision of the Little Rock District of the U. S. Army Corps of Engineers, the bridge will have a 1,862-foot-long deck rising more than 200 feet above the river bed. The 22-foot roadway will be supported by cantilever through trusses spanning three openings of 420, 480, and 420 feet and two through trusses on the south end spanning 240 feet. A short span of 50 feet between the north abutment and the first pier will be supported by deck girders. Five reinforced-concrete piers, the highest rising to 210 feet, and two abutments form the substructures of the bridge.



A workman checks the level indicator that measures the tilt produced by jacks or weights to keep the form in alignment. The indicator, a transparent plastic hose filled with water, is strung longitudinally and transversely along the deck of the form. Readings are made on the yardstick alongside the hose.

Guy H. James Construction Co., Oklahoma City, Okla., started work on the \$450,000 contract for the substructures last August, and by the first of September, the contractor was ready to start pouring the 7,500 cubic yards of concrete in the seven substructures. He decided to use slip forms on the four taller piers, which ranged from 89 to 210 feet in height, and conventional forms on the two abutments and one short pier.

The construction of the 210-foot pier on the north bank of the river was typical of the method used in slip-forming the other piers. The pier rests on a stepped footing founded on rock and rises in four sections to

(Continued on next page)

All around the town...



Here's the mobile belt-loader that solves truck-loading problems for those who handle big yardages of loose dirt and aggregates. It's the high-speed, Adams TraveLoader... for truck-a-minute loading from stockpile or windrow.

Big capacity cuts costs

TraveLoader gathers and loads up to 600 yards per hour—handles dirt, sand, gravel, crushed stone, slag, topsoil, cinders, snow, and many other materials.

Machine heaps trucks evenly and fast, at lowest-net-cost-per-yard... continuously discharges full load of material off belt running at a speed of 450' per minute. Speedy loading cuts truck waiting-time... holds

hauling cost to a minimum. With a 40 to 60-second loading cycle, loader handles big jobs fast... keeps your jobs on schedule.

Loads in continuous motion

Unlike front-end loaders, TraveLoader works without turns, back-ups, or other waste motions... does not need to push against solid backing to load cleanly. Loader moves forward at any of 5 working speeds (25 ft. to 167 ft. per min.). Machine gathers and conveys material from any width up to 8', and discharges material evenly into trucks. TraveLoader loads into trucks at its rear for minimum road obstruction... or, with optional cross-conveyor, into trucks at left and/or right.



Load trucks at lowest cost!

Handles many jobs in one day

Rubber-tired TraveLoader has 5 travel speeds, moves quickly from job to job at speeds to 26.7 mph... from stockpile, to windrow, to bank work. Positive, convenient controls make loading simple, make maneuvering and traveling as safe and easy as driving a truck.

Machine is powered by either 55 hp gasoline or 60 hp diesel engine... weighs approx. 16,700 pounds.

Get information without obligation

Write or phone for detailed specifications, and names of users working TraveLoader on loading projects similar to yours. No obligation.

How Radory Construction Co. speeds-up street-repair work



Radory Construction Company, West Hempstead, N.Y., specializes in street repair and repaving work for towns on Long Island. Contractor keeps a number of crews busy on street-repair, maintenance, sealing and oiling, and blacktop paving contracts.

Radory employs several mobile TraveLoaders to load dirt and construction materials into trucks. Often one machine is assigned to a specific job-site for continuous work—such as cleaning-up windrows of surplus fill, or loading stone from off-street stockpiles. Or a machine may work on several projects in one

day...traveling from one location or materials-yard to another... handling many jobs, each at lowest-cost-per-yard loaded.

This contractor has devised a short-cut method for patching pavement after installation of sewers and water lines. TraveLoader is used to do two jobs at one pass—cleaning-up and preparing refilled trenches for patching crew. A special blade... as wide as the trench... is bolted to regular TraveLoader blade (see illustration at left). After trench has been back-filled and compacted, TraveLoader moves in... loads surplus dirt into trucks. On the same pass, special blade automatically digs-out surplus material and grades at proper depth for gravel base and blacktop-patch over trench. Pretty neat... and a time-saver, too!

Adams—Trademark AL-1222-H-b



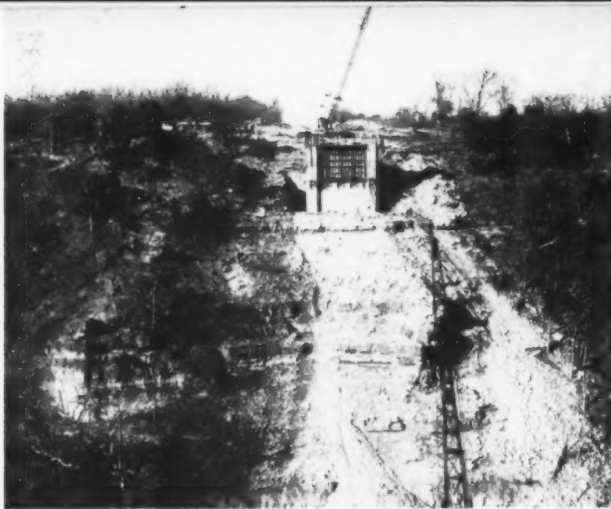
LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

Where Quality is a Habit

For more facts, use Reader-Reply Card opposite page 18 and circle No. 243



An American Model 375BT crane places conventional forming for a pier on the steep hillside overlooking the White River Valley. The abutment of the bridge is just 50 feet behind the pier.

a T-shaped cap at the top. The first section consists of two 14x16-foot shafts connected by a 4½-foot-thick web. The shafts have beveled corners and contain an 8-foot diameter well in their center. The other three sections have similar cross sections, but are smaller, being stepped in as the height of the pier increases. The fourth and highest section is solid reinforced concrete.

Building the slip form

After excavation had been made to bed rock, the stepped footing and about twelve feet of the first section of the pier were built with conventional forms. On top of this stub of the first section, workmen assembled

the slip form. Prefabricated portions of the form arrived on a work wagon and a crane transferred them to the top of the stub as they were needed.

The part of the slip form that actually contained the concrete was a 4-foot high section of ¾-inch plywood that was built to conform to the outside dimensions of the pier. The form for the well in the pier was an 8-foot-diameter plywood-lined cylinder 4 feet high. The plywood of the outside form was backed by two horizontal segments of laminated 2x6's.

The outside plywood and the inside tube were held in place and given strength by the yoke, a rigid structure above the form. Vertical wales of double 2x8's extended from the plywood form up to the yoke. The yoke was made up of two frames, one above the other, connected by the vertical wales. The top frame was composed of a grid of double 5-inch channels. The bottom frame was made up of double 2x8's as well as double 5-inch channels.

An enclosed working platform, extending out from the plywood form, was built around the pier. The platform is supported by 2x6 cantilever frames tied to the horizontal backing of the plywood. The finishing scaffold was about ten feet below the working platform. It was supported by a box frame of 2x6's that extended down from the supports of the working platform.

About twenty conventional screw-type jacks, bearing on the double 5-inch channels of the yoke, were distributed evenly throughout the form. Each jack worked its way up to a 1-inch steel rod founded on the concrete of the section below. The jacks were manually operated by a crew of about seven men.

Going up

A crane using a Gar-Bro 1-yard bucket swung the concrete from a transit mixer to the slip form. Because of the many reinforcing bars sticking up from the two shafts, it was necessary to place the concrete at the center of the web and carry it out to the sides with wooden chutes. Concrete was poured in lifts of about 4 inches and was puddled by hand. Electric vibrators were not used since they would have endangered the set of the concrete just below.

As concrete was poured into the form, workmen skillfully controlled the screw-type jacks to keep the form moving upward at a rate of speed corresponding to the rate at which concrete was setting up. The alignment of the pier was controlled by using the jacks to tilt the form slightly one way or the other and by placing weights at various positions on the working platform.

The amount of tilt produced by either of these procedures was measured on a simple level indicator made of transparent plastic hose filled with water. Sections of hose were strung along the working deck both parallel and at right angles to the centerline of the bridge. Workmen checked the



SPEED CONSTRUCTION-CUT COSTS WITH CLEVELAND FORMGRADER PAVING EQUIPMENT

A Cleveland Formgrader and just one man will cut 6,840 feet of form trench in less than six hours. The Formgrader eliminates the necessity of undercutting the area underneath the forms, which would destroy the compaction of the soil and lessen the bearing capacity.



Cleveland Form tamper
For tamping



Cleveland Trailgrader
For subgrade finishing



Subgrade Scratch Template
For Testing



Steel or Aluminum Straight Edges
For Finishing



Also bridges, form and stake pullers, strike-offs, rollers and floats.

CLEVELAND FORMGRADER CO.

Mills Road • Avon, Ohio

- ☐ SEND NAME OF NEAREST DISTRIBUTOR.
☐ SEND LATEST LITERATURE.

Name _____
Firm _____
Address _____
City _____ Zone _____ State _____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 244

level of the water by reading a yardstick that was nailed alongside the vertical end of the hose. The alignment of the pier was controlled to plus or minus 1/4-inch by two transits stationed on the ground. One was sighted on a target on the form at right angles to centerline of bridge, and the other on a target on a line parallel to the centerline.

As the slip form moved higher on the pier, workmen standing on the scaffolding below the form finished the concrete with wood floats. Hunt Process Clear membrane curing compound, supplied by Carter-Waters, was sprayed on the finished concrete by hand. The slip form left a textured surface free from form marks or tie-rod holes.

The pouring operation continued around the clock until the top of the 73-foot-high first section was reached. It was then necessary to rebuild the form to comply with the smaller dimensions of the next section of the pier. The forming crew did this in only 12 hours by using a unique re-forming method.

Pre-cut plywood inserts were built inside the original form to correspond to the smaller dimensions of the next section. In making this transition, it was not necessary to alter the yoke or original form. To form the T-shaped cap of the pier it was only necessary to remove the inserts and make minor changes in the original form.

As pouring moved to the higher sections, the smaller crane was replaced by a P&H Model 955 ALC crane with a 130-foot boom and a 20-foot jib. On the fourth section, the P&H was replaced by a Clyde two-drum hoist powered by a Minneapolis-Moline engine. The cable ran to a shop-made Chicago boom that swung the Gar-Bro 1/2-yard bucket into the center of the pier.

The speed of the slip-form method is evidenced by the fact that the 210-foot pier—excluding the footing and short stub—was built in approximately 400 hours. The contractor worked with two sets of slip forms; while one crew of 12 and 18 men were working on a pour, another crew was setting a form for a transition on another pier. The excellent safety record on the job has borne out the superintendent's belief that the slip-forming of high piers is safer than conventional forming. In slip-forming, the men on the pier are almost always working within an enclosed platform. When conventional forms are used, men are more exposed and much more handling of form panels from the swinging hook of a crane is necessary.

Concrete

The Class A concrete for the job was a six-bag mix that ran about 4,000 pounds on a 28-day break. A 3-inch slump was found to yield the best results for the slip-forming operation. When necessary, the water for the mix was heated to obtain concrete with specification temperature and Hunt's Air-in air-entraining agent was added to obtain 3 to 5 per

(Continued on next page)

A 4-yard load of concrete is picked up by a Challenge mixer on an International truck at the Winslow concrete plant. The 75-ton capacity bin is kept charged with aggregates by a Lorain crane with Pettibone-Mulliken 3/4-yard clamshell.

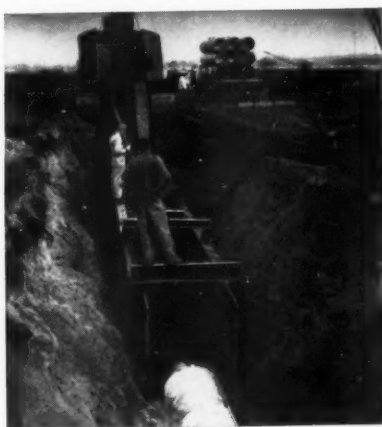


Armco SMOOTH-FLO Sewer Pipe being lowered into a trench for new South Bend, Indiana, combined sewer. Special trench shield was designed by the contractor. Exterior of pipe has a protective whitewash coating.

Clyde E. Williams & Associates
Consulting Engineers
Raymond Andrysiak
City Engineer
Niles Excavating Company
Contractors



Contractor Installs Armco SMOOTH-FLO Sewer Pipe 50% Faster Than Estimated



Back hoe pulling shield into position for another length of SMOOTH-FLO Pipe. In background is truck with nine lengths of pipe.

The Niles Excavating Company, contractors of South Bend, Indiana, recently installed Armco SMOOTH-FLO Pipe as a combined sewer for South Bend. This contractor found he could install the SMOOTH-FLO Pipe 50% faster than anticipated!

Considering equipment and manpower, the contractor estimated he could complete 225 feet of the sewer a day. But he had no trouble in laying and finishing as much as 340 feet a day.

A special trench shield designed by the contractor helped speed the job. A back hoe excavated ahead of the shield about two inches below grade. Then it pulled the shield along the trench. A flat metal plate on the shield leveled the earth in the trench bottom, providing a soft cushion and uniform grade.

Armco SMOOTH-FLO Pipe was placed through the shield by means of the lifting lugs. After attaching coupling bands, the pipe was backfilled immediately. And the shield moved on.

Speed of installation is an important advantage you get in all of the more than 30 Armco Products for drainage and construction. They are used in a wide variety of applications for highways, railways, industries and municipalities. Write us for complete data. Armco Drainage & Metal Products, Inc., 4667 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO CONSTRUCTION PRODUCTS



For more facts, use Reader-Reply Card opposite page 18 and circle No. 245

(Continued from preceding page)

cent of air in the mix.

A dragline conveniently obtained the 1½-inch aggregates for the concrete from the riverbed only a short distance downstream from the bridge. The natural gravel was put through a screening and washing plant and hauled to stockpiles beside the batch plant.

Batch plant operation

The Winslow Binanbatch plant kept transit mixers rolling to the bridge site as the piers headed skyward. Challenge mixers mounted on International trucks received 4-yard loads from the plant. A Lorain Model TL25J crane with a Pettibone-Mulliken ¾-yard clam filled the 75-ton

capacity aggregate bin above the plant, and water for the mix was pumped from the river by a Jaeger 4-inch portable pump.

The conveyor motor of the 1,600-barrel silo adjoining the plant was powered by a Cat D3400 3-phase, 220-volt generator set. The Dewey portland cement, which arrived by rail at Reeds Springs, Mo., was unloaded by a Baughman screw conveyor into a Ford truck with a covered box to be hauled 14 miles to the job.

Contributing to the speed of the job was an efficient communication setup. This wireless intercom system, employed by the contractor with such good results, was used for messages between the deck of the slip form, the trailer office, the batch plant, and the

carpenter shop. The closed system, which made use of the electric lines on the job, was free from the usual interference of radio transmission. General Electric mobile transmitters in the office, the vehicles, and the superintendent's trailer home supplemented the intercom.

Personnel

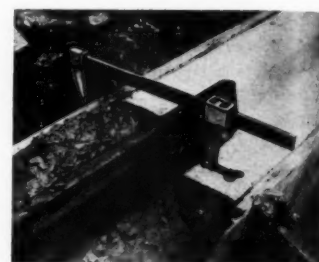
On this job, L. F. Sherman is resident engineer for the Corps of Engineers. J. W. Storey is assistant resident engineer, John P. "Pat" Reilly is supervisor of highway relocation, and H. B. King is project engineer on State Highway 13 relocation.

For Guy H. James Construction Co., George C. Green is the general superintendent; R. W. Wilson, Jr., project engineer; and Dallas Rounds,

office manager. Superintendents for the three shifts were Roy Banning, Burt Shelton, and Boots Barnes. C. W. Davis of Fort Worth, Texas, is the consulting design engineer for the forms. THE END

Deep-throated clamps keep concrete forms positioned

■ Deep-throated clamps with adjustable multiple-disk clutches to hold concrete forms in position are available from the Adjustable Clamp Co. The Jorgensen clamp No. 45 is es-



The deep-throated Jorgensen No. 45 clamp with the adjustable multiple-disk clutch speeds the setting up of curb and gutter forms.

pecially recommended for double step work such as curb and gutter construction.

According to the company, the use of the clamp speeds the setting up of forms and effects other economies. The clamp requires little space and leaves ample room for troweling, the company reports.

For further information write to the Adjustable Clamp Co., 417 N. Ashland Ave., Chicago 22, Ill., or use the Request Card at page 18. Circle No. 155.

Lincoln Electric issues arc welding handbook

The eleventh edition, a revised volume, of "Procedure Handbook of Arc Welding Design and Practice" is available from the Lincoln Electric Co. Eight sections of the book discuss various phases of arc welding—history, nomenclature and processes, weldability, mild steel procedures, manufacturing cost data, machine and structural design, applications, and reference data.

The rewritten, 465-page structural section details the theory and application of the rigid frame and plastic design systems. Structural members and joints are developed, and charts and monographs simplify the design calculations.

Each of the eight sections in the 1,300-page book has its own table of contents, and a list of references concludes each section. Tables, graphs, charts, formulas, diagrams, and equations supplement the text.

The \$3.00 book can be purchased from the Lincoln Electric Co., 22801 St. Clair Ave., Cleveland 17, Ohio.

Company changes name

Severud, Elstad and Krueger, New York, N. Y., engineers, has announced the change of its name to Severud-Elstad-Krueger-Associates. Fourteen men have been named associates in the company.

CONTRACTORS AND ENGINEERS

"CLEAN LIVING" GIVES A CHEVY ENGINE LONGER LIFE!

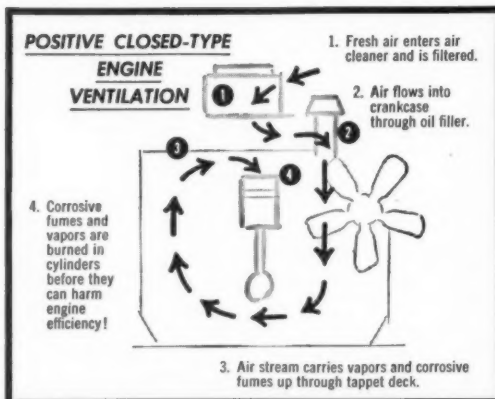
... more evidence that Chevrolet Task-Force trucks are engineered better and built better for bigger savings!

This drawing shows, roughly, one of the ways in which Chevrolet truck engines minimize a major cause of wear—dirt! Now consider this additional evidence that Chevy heavy-duty V8's and 6's "live clean" and bring you fleet, dependable power that costs less to use!

Extra filters give extra-clean fuel—Only clean fuel reaches the engine—that's one reason you can depend on a Chevrolet truck! All fuel is filtered twice (once in the fuel tank and again in the carburetor) to keep dirt and water from hampering efficient operation. Chevrolet truck V8's provide a third filter, at the carburetor, for triple protection!

Oil stays clean longer, too—Chevrolet truck V8's and 261-cu.-in. 6's come equipped with modern high-capacity oil filters (V8 filters are of the Full-Flow type). These engines keep clean oil flowing to moving parts; parts wear less and last longer because of it!

Even the air is cleaner—Dust and foreign matter in the



air an engine "breathes" can reduce engine life by years. Chevrolet minimizes this wear-producing factor by providing big oil-bath air cleaners as standard equipment on all truck engines.

These are sound under-the-hood reasons why a Chevrolet truck will stay on your job and save on your job. There are others, too, including short-stroke V8 design (shortest stroke of any truck V8's!) and 6-cylinder engine design that puts out more power than any other in the field. You'll learn about them all when you visit your Chevrolet dealer. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.



Biggest sellers . . . because they're biggest savers!

CHEVROLET TASK-FORCE 57 TRUCKS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 246



A workman measures the penetration of one of the Foster rail piles during a series of tests to determine the strength characteristics of the new foundation piles.

Foundation pile consists of three rail sections

■ A new type of foundation pile that is made up of three steel rail sections welded together at their bases to form, in cross section, a hollow equilateral triangle with the rail heads extending outward at 120 degrees is announced by the L. B. Foster Co.

The shape gives the pile a generally symmetrical section so that its section modulus is approximately the same around any axis. The heaviest concentration of metal in the pile is at the rail heads, which are the flanges of the section. Because of the thickness and rigidity of the rail heads, the company reports, the piles can push aside obstructions or punch through tough strata without damage or deflection.

The rail piles are available in weights ranging from 60 to 133 pounds per foot and in lengths of from 28 to 39 feet multiples. Sections are butt-welded to obtain longer piles. The piles can be driven with any conventional set of leads and hammers. No mandrels or other special equipment are required.

In tests by the company, rail piles of different weights were driven approximately 80 feet to refusal on bedrock with a Vulcan No. OR hammer rated at 30,000 foot-pounds. Another test showed that the piles could be struck upwards of 200 blows with a No. 1 Vulcan hammer at final refusal without damage.

For further information write to the L. B. Foster Co., 11 Park Place, New York 17, N. Y., or use the Request Card at page 18. Circle No. 142.

Universal Form appoints, opens Canadian office

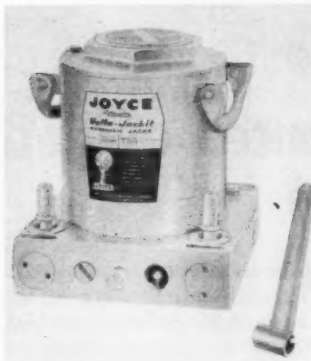
John Niekamp has been appointed branch manager of the Houston, Texas, office of the Universal Form Clamp Co., Chicago, Ill. MacGregor Anderson, who formerly held the post, has been named consultant and adviser.

The firm has opened a subsidiary in Ontario, Canada. The new firm, Universal Form Clamp Co. of Canada, Ltd., will be located at 226 Norseman St., Toronto. J. D. Livingston will be manager of the firm.

One of four new hand hydraulic jack models available from the Joyce-Cridland Co., this 100-ton-capacity unit has a serrated contact pad. Smaller models have contact pads with circular grooves.

Hand hydraulic jacks have replaceable pump assembly

■ A new line of hand hydraulic jacks designed especially for construction applications is available from the Joyce-Cridland Co. According to the company, the jack's hydraulic pump can be replaced in the field with an inexpensive pump assembly.



Named the Joyce Liftmaster Yellow-Jacket, the new jack is available in

capacities of from 3 to 100 tons. Great stability under off-center loading is provided by a durable malleable iron top cap. An oversized malleable iron pump is designed to withstand sudden strain, the firm reports.

A safe positive-grip contact pad with a circular groove prevents loads from slipping on the 3 through 20-ton models. Serrated pads are provided on the 30, 50, and 100-ton models. All valves are under one cap screw for maintenance without dismantling.

For further information write to the Joyce-Cridland Co., 2027 E. First St., Dayton, Ohio, or use the Request Card that is bound in at page 18. Circle No. 75.



"We're blasting near you"



Now you can gain better public relations in communities where you are blasting by showing an interesting, informative film, in color!

It works, too. The film, entitled, "We're Blasting Near You" has already been shown by contractors and quarry operators in many parts of the country, to audiences including PTA groups, civic organizations and service clubs.

The movie tells why blasting is necessary, and explains the steps you are taking to "be a good neighbor." It shows how millisecond delay techniques eliminate the old-fashioned, jarring explosions of the past, and

how modern blasting methods keep noise, vibration and flying rock to a minimum.

This unique film is accompanied by a kit of suggested news releases, sample speeches, safety posters and other helpful material—everything you need to conduct a successful meeting in your community. Plan now to get the important public relations benefits from showing "We're Blasting Near You." Write, telling us the approximate dates you'd like to schedule it.

Technical Customer Service Section
ATLAS
POWDER COMPANY
WILMINGTON 99, DELAWARE
offices in principal cities

For more facts, use Reader-Reply Card opposite page 18 and circle No. 247

Better your chances of getting credit

by GUY C. KIDDOO

vice president

The First National Bank
of Chicago

How can contractors improve their credit standing to take on work under the expanded highway program? I could say, get a better price for your work. But the answer is not that simple.

Loans of all commercial banks have expanded over 28 per cent in the last two years—which shows the largest 24-month increase in history—and right now there is an unprecedented

demand for a relatively limited supply of funds. To forestall a rise in prices, the monetary authorities have not permitted the money supply to increase faster than the supply of goods. We are now in a time when demand exceeds supply, money is scarce, interest rates rise, and banks exercise an increasing degree of selectivity in extending credit to those in all types of businesses.

At present, the current high level of business activity is expected to continue, and there will be increased pressure on the price structure and a strong demand for credit. While this condition continues, monetary authorities are not apt to permit credit to become any easier. Contractors should not count on finding it easier to borrow money in the future than in the past.

Building capital difficult

The best basis for getting credit is getting a better price for your work. But profits are no better with a greater volume of work today because of the increase in the number of firms competing for jobs. Out of 4½ million business concerns in the U. S. at the beginning of 1956, 475,000, or well over 10 per cent, were in construction. There are now nearly 3½ times the number of firms operating than in December, 1943. In 1955, contract construction showed the largest relative increase in the number of operating concerns—6½ per cent.

The profit trend has been downward since the war. In 1947, net profits on work performed were 5 per cent, and in 1954, 1.29 per cent. In 1939, 4.4 per cent of all business failures were in construction. In 1955, 12.8 per cent of the businesses that failed were construction firms.

U. S. Treasury income tax returns for 1953 show that 34,866 construction corporations had a net profit after taxes of 1.5 per cent as compared with 2.4 per cent in 1952. By comparison, all industrial groups had a net profit of 3.4 per cent.

Dun & Bradstreet reports that in 1955, 1,404 construction contractors failed with liabilities of \$83,179,000, but in 1956, there were 1,834 failures among contractors, and liabilities ran over \$100 million.

The First National Bank of Chicago probably does more business with contractors than any other bank in the country and perhaps our larger customers do a little better than the average. Twenty representative firms in heavy engineering and highway work, on a total volume of \$165,700,000, had profits of \$2,991,000, or a modest 1.92 per cent in their last fiscal years.

On the first 12 contracts let on the Illinois state toll highway, the average of the second bids was 6.3 per cent higher, and the highest bids, 22.8 per cent higher than the low bids. Of course, the low bidders all said they had good jobs, and most of the unsuccessful bidders said, "It can't possibly be done for that amount of money!"

With competition forcing contractors to cut estimates to the bone, and the price level forcing up the cost of financing construction, contractors have found it difficult to build up capital proportionately out of retained earnings after taxes. An added difficulty for contractors is that the character of the industry does not make it attractive for capital investment for those not active in it.

Getting term credit

In this situation, where is the best place you can find the credit you need for equipment such as tractors, which

95-ft to 132-ft
Pretensioned
prestressed
piles
on 2
construction
jobs...

...driven by McKIERNAN-TERRY PILE HAMMERS

The successful driving on 2 jobs of probably the longest pretensioned prestressed concrete piles ever used in the world has attracted particular attention to this type of pile for extra-length driving.

Ben C. Gerwick, Inc., was the contractor on both projects. In one case, 200 of the piles were driven between Piers 15 and 17 in San Francisco. The piles were 20-in. octagonal with an 11-in. hollow core, in lengths 95 to 132 ft with a design load of 60 tons each. All were driven down to grade with a McKiernan-Terry S10 Single-Acting Pile Hammer. The initial material was about 30 ft of rip-rap and rock fill, and Mr. Paul G. Morken, Vice President of Ben C. Gerwick, Inc., reports that "no difficulty was experienced penetrating this material and then obtaining the remaining full penetration required by the Harbor Board—thanks to the S10."

Piles of the same type, up to 105 ft in length, and totaling 11,700 linear ft, were driven about a month previously by Gerwick for the Eureka Slough Bridge on U. S. 101 north of Eureka, California, with equal success—typical of the results obtained by contractors all over the country in their use of McKiernan-Terry Pile Hammers to assure time-saving, cost-saving pile-driving jobs, whether special or routine.

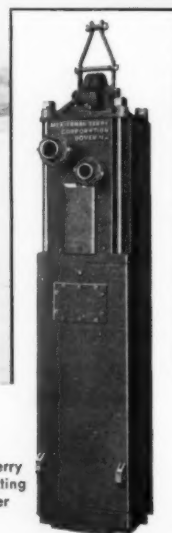
Write for bulletins describing the entire line of McKiernan-Terry Pile Hammers and accessories.

McKIERNAN-TERRY CORPORATION
MANUFACTURING ENGINEERS

82 Richards Ave., Dover, New Jersey

For more facts, use Reader-Reply Card opposite page 18 and circle No. 248

McKiernan-Terry
S10 Single-Acting
Pile Hammer



MK308

**Manufacturers, dealers offer best bet for credit on equipment;
form and contents of financial statements important to banks**

have increased 83 per cent in the 1947-56 period, and bulldozers and shovels, which have gone up 70 per cent during the same time?

Your best chance for obtaining term credit on equipment is from the manufacturer or dealer. The banker, if he has to repossess equipment and sell it to collect a loan, has no facilities to handle the machine, while the dealer can take it back, recondition it, and then sell it to much better advantage.

The banker is your best source for working capital credit, but with the present strong demand for loans on most banks, they may view your application warily. One reason for this is that the banker can do little to secure himself against the loss that often comes without warning. A lien on equipment usually does not provide adequate security. An assignment of contract proceeds is of little value where a surety company has a prior position with the assignment obtained when the bond was written.

Financial statement

To present your case to your banker in the best possible light, here is what you need: first, a complete detailed financial statement, preferably by a C.P.A., at least for fiscal periods. With this you should have a schedule showing the status of all contracts in progress, including the amount of each contract, amount earned and cost with the profit or loss to date, estimated completion date, and final estimated profit. Your profit and loss statement should show whether profits are taken up on an accrual basis or only on completion, and it should be sufficiently detailed to show profits on each job, charges for depreciation or use of equipment, and reserves for income taxes and deferred liabilities.

You should also present a forecast as to cash flow, showing both the maximum amount of credit you may need and just when funds will be recovered from your jobs and available for payment of loans.

So much for the form; what about the substance of these statements? There must be reasonable ratios between amounts invested in equipment and working capital available to finance payrolls and materials. There are no absolute formulas that can be laid down for these. A study of 32,158 corporation balance sheets filed with 1953 income tax returns showed about 40 per cent of net worth represented by gross capital assets, total liabilities about 141 per cent of net worth, and a current ratio of about 122 per cent, which I feel is entirely too heavy a debt position. This may be one reason why 39 per cent of these firms reported no taxable income.

Dun & Bradstreet figures for 133 large building and construction con-

tractors showed only 22 per cent of net worth in fixed assets with current debt 60 per cent and total debt 106 per cent of net worth, which I believe are much sounder proportions.

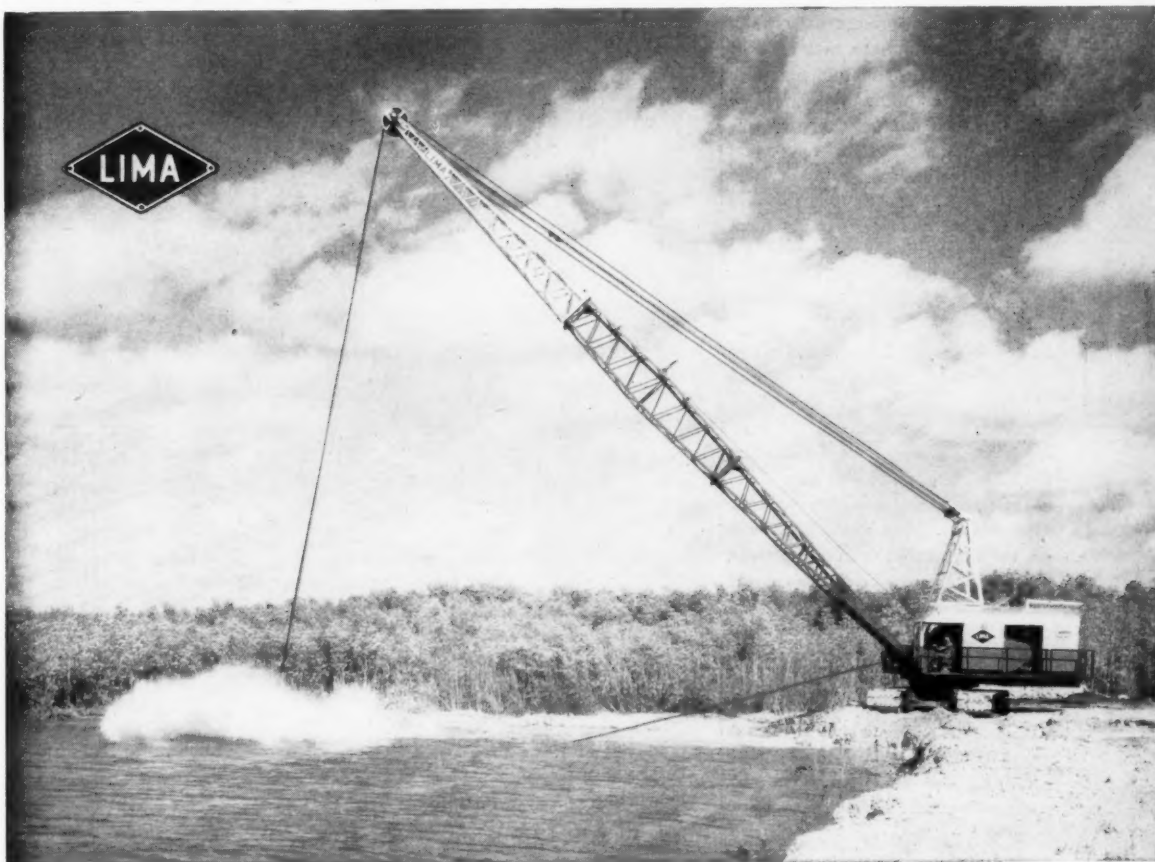
In heavy engineering or highway work requiring a large investment in

equipment, I believe up to 60 per cent or perhaps even 70 per cent of net worth may be in fixed assets, if the remaining 30 per cent is in net working capital.

As a very rough rule, I have sometimes suggested that a contractor

should not expect to borrow more than the amount of his net working capital which, of course, is the difference between current assets and current debt.

But beyond the financial figures, experience tells a banker to look for



Lima Type 1201 dragline equipped with an 85-ft. boom, dredging channel into Biscayne Bay at Ojus, Fla. Approximately 250,000 cu. yds. of sand and coral rock will be moved to complete this job.

LIMA dragline speeds dredging operation in Florida

This big Lima Type 1201, owned by L. C. Morris, Inc., of Miami, Fla., is making quick work of dredging a channel into Biscayne Bay. Day in and day out, their Lima takes fast, steady bites of sand and coral rock. It's the built-in quality extras—such as piston-ring-type dirt seals and retainers in crawler rollers... flame or induction-hardened moving parts for longer life... properly balanced weight for maximum efficiency... anti-friction bearings at all important points... oversize drums and sheaves for long cable life... and extra-wide, extra-long crawlers for greater stability—that result in big production with minimum repair and maintenance.

It will pay you to get the full story on Limas from your nearby Lima distributor, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.



**COMPARE OTHERS WITH LIMA
FOR QUALITY AND YOU WILL
SPECIFY LIMA**

Shovels . . . 1/2 to 6
cu. yds.
Cranes . . . to 110 tons
Draglines . . . variable
Smaller capacity models
available on rubber

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other possible sources of trouble. You may check these sources yourself by finding your own answers for several pertinent questions. Do you have a sound accounting system and up-to-date cost records that furnish a base for intelligent bidding and that show promptly unfavorable profit trends on work in progress? Are you experienced in roadbuilding or have you been primarily a sewer contractor and think you would like to pick up what looks like easy money in roadbuilding?

The banker knows that every contractor will occasionally have a bad job. But if the contractor is to be a safe risk for a loan, he should not take on a job so large that it becomes risky, or spread his resources so thinly over a number of jobs that he does not have the safety margin to absorb a loss. Many contractors recognize no limits to their ability. They are seasoned to taking risks, or they would not be in the business. Many of them operate on the theory that the sure road to profits is bigger jobs and more and more work, when the banker and surety man know that this often leads to trouble.

Some concern has been expressed as to whether the construction industry can handle the increased amount of highway and other work in sight. I have no such doubts. Of the hundreds of thousands of contractors now operating, many will shift more of their operations into highway work as other lines slow down. They will get the work done; open, competitive bidding assures the public that it will be done at a very modest cost. My concern is that inexperience and overreaching ambition may result in much of the work being bid too low to cover the increasing costs, the inherent risks in the business, and a modest profit. There is a wide field of opportunity for the man with the proper combination of experience, ability, judgment, vision, energy, and resourcefulness. Many men who start with modest capital have made financial successes that are unequalled in any other fields. But they are the ones who realize that along with big opportunities go big risks that inevitably bring failure to the incompetent.

THE END

From an address by Guy C. Kiddoo before the Contractors Division of the American Road Builders Association in Chicago.

Dragline bucket catalog

■ A catalog illustrating and describing the new lightweight Page A Series automatic dragline bucket is available from the Page Engineering Co. Sections of the catalog illustrate the features of the new series of buckets and the types of work each bucket in the three classes will accomplish.

One section is devoted to a detailed explanation of what makes a dragline bucket dig, how a dragline works, the Page automatic's digging action, and the reasons this action is important to top production.

To obtain Catalog A57 write to the Page Engineering Co., Clearing Post Office, Chicago 38, Ill., or use the Request Card at page 18. Circle No. 67.

Canopy for pick-up truck protects in all weather

■ Contractors utilizing pick-up trucks can get panel truck protection with a canopy manufactured by State Canvas & Frame Supply, the company reports. The covers are made of heavy-duty water-repellent duck, tailor-made to fit all models of all years.

Each of the three curtains raises or lowers independently, permitting loading or unloading at the sides or at the rear. The canopy frame is fabricated from cold-rolled electric-welded steel tubing that is zinc plated.



For further information write to State Canvas & Frame Supply, 4019 Medford St., Los Angeles 63, Calif., or

use the Request Card that is bound in at page 18 of this issue. Circle No. 2.

NOW! End-to-End TANK CIRCULATION

*protects material
quality*

→ Duo-Flo bar circulation when spraying

..... Bar and tank circulation

--- Tank circulation only

~ Duo-Flo heating

Plus

greatest operating simplicity and safety ever built into a bituminous distributor



Now you can get a bituminous distributor that positively circulates material in the tank for faster, more uniform heating. This new Seaman-Gunnison system eliminates local hot spots; there is less evaporation of solvents; less burning of bitumen residue and consequent less coking and nozzle clogging.

And, gone is the maze of rear-end piping! . . . eliminated by Seaman-Gunnison front-end pumping and control. Air-operated nozzles open or close in a split-second, while the Duo-Flo bar assures precise, uniform nozzle pressure and material application.

Write for free descriptive Bulletin No. 8, giving complete information. Use coupon on next page . . . Write today!

Safety front-end control

gives the operator a grandstand view of the spray bar, safely away from hazardous smoke and fumes. Cab control for complete one-man operation is optional.

Only one high production, high-quality design for bid buyer or road contractor

**SEAMAN
GUNNISON**

Avoid legal pitfalls

Liquidated damages

THE PROBLEM: A village contract specified that a sewer contractor should pay as "liquidated"—agreed—"damages" \$25 for each day's delay in finishing the job. (1.) Was the clause void because the ordinance providing for the project did not specify that the contract should or

might include such a clause? (2.) The village retained from final payment a sum less than the amount of delay damage actually sustained. Did the village thereby waive right to counterclaim the full amount of damage when sued by the contractor for a further sum allegedly due him?

THE ANSWERS: (1.) No. (2.) No. (Snyder v. Village of McArthur, 133 N. E. 2d 399, decided by the Ohio Court of Appeals, Vinton County.)

(1.) The village council discharged its power and duty under governing statutes, when it approved plans and specifications for the sewers, ordered the improvement, and provided for

the assessment of abutting property to pay the cost. It was then up to the administrative officers to enter into a detailed contract and supervise construction, since letting a contract for public improvement is not a legislative function.

(2.) The clause providing for damages for delayed performance on a \$25-per-diem basis was reasonable, considering the village's loss through delay. But ordinarily, the city would have waived its right to collect damages by paying the contractor the full contract price. Here the village did retain a certain sum as damages on a theory that the payment

Edited by A. L. H. STREET Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

of the balance to the contractor discharged the village's indebtedness under the contract. But when the contractor sued for further pay allegedly due him, the village was not prevented from demanding credit for the full amount of damages payable according to the contract terms.

Valid date of contract

THE PROBLEM: It is a basic rule of law that an agreement does not become binding on either party until and unless the essential terms of the contract have been agreed upon. A school board advertised for bids on two buildings. Before making his own bid, the successful general contractor secured a bid on heating and ventilating from a prospective subcontractor. Later the prime contractor refused to sign a subcontract unless the subcontractor reduced his bid by about \$2,000.

The accepted bid for the subcontract, based upon plans and specifications, covered all details and conditions affecting the work. Did a binding subcontract result from the acceptance of the bid, even though the parties had not agreed on such matters as a subcontractor's bond, reciprocal liability in damages for delay, or time provisions for remedying defects?

THE ANSWER: Yes. (Stites v. Yelverton, 289 Pac. 2d 628, decided by the New Mexico Supreme Court.)

The court referred to several appellate-court decisions where similar questions had been involved. A distinction was drawn between this case and one where the Utah Supreme Court declared that negotiations did not result in an agreement upon the terms of a subcontract, (R. J. Daum Construction Co. v. Child, 247 Pac. 2d 817, 820).

In the Utah case, a government job had been awarded to a prime contractor who had based his own bid on a subcontractor's bid. He later successfully defended a suit by the subcontractor because it had been merely understood that if he secured the prime contract, he would negotiate with the prospective subcontractor. The court said that the evidence showed that neither party had considered at the time that there was a binding contract.

More in point, the New Mexico court thought, was the decision rendered by the Massachusetts Supreme Judicial Court in the case of Duggan v. Matthew Cummings Co., 277 Mass. 445, 178 N. E. 825. There the plaintiff had made a written offer to erect structural steel at \$17 a ton on spec-

For more facts, use coupon or circle No. 250.

After 800,000 cu. yd. compaction experience, Krump Construction Company buys another DUO-PACTOR

Based on an estimated saving of 50 per cent in compacting 16,000 cu yd daily with three Duo-Pactors, this prominent Milwaukee, Wis. contractor has bought another Duo-Pactor to start the 1957 season.



Now, you can do ALL types of compaction with a single unit . . . the new Seaman-Gunnison DUO-PACTOR! Moreover, you can save 50 per cent or more in cost of compaction equipment. You easily meet compaction specifications. You slash operating costs. You save time with Duo-Pactor self-propelled, self-transporting mobility.

These savings result from the Duo-Pactor idea of combining small diameter steel roll and rubber tires to develop high compressive pressures. Vibratory roll and side-slope compactor attachments further adapt the Duo-Pactor to special requirements—literally giving you a complete compaction and surface-rolling system in one low-cost machine! Proof of Duo-Pactor savings: Contractors are now making repeat Duo-Pactor purchases to help beat the cost squeeze on 1957 contracts!

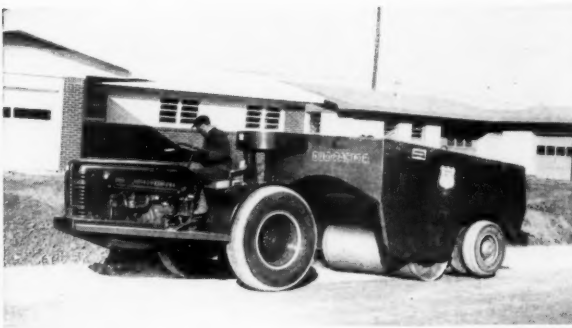
Contractors prove DUO-PACTORS obtain specified densities at LOWER COSTS!



Krump Construction Company, Kingston, N. C., "has found the Duo-Pactor most satisfactory. We have used it on streets, highways, airfield runways and parking areas with excellent results."

Duo-Pactor is another development of Harry J. Seaman, pioneer in soil stabilization equipment and techniques for more than 20 years. Duo-Pactors and Seaman Duo-Flo Bituminous Distributors are manufactured only by Seaman-Gunnison Corporation.

- Duo-Pactors
- Duo-Scrapers
- Duo-Flo Bituminous Distributors



Ritchie Brothers Construction Company, Wichita, Kan., reports: "We use the Duo-Pactor to do the work of three machines on rock base and seal coating. It's fast, and does a mighty good job."

Seaman-Gunnison Corporation,
Dept. CE-5, 2763 S. 27th St., Milwaukee 15, Wis.

Please send me full information about

- ☐ Duo-Pactor ☐ Duo-Flo Bituminous Distributor
☐ Duo-Scraper ☐ Name of my S-G Dealer

Name _____

Organization _____ Position _____

Street and No. _____

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avoid legal pitfalls

fied terms. The defendant later wrote to the plaintiff: "We accept your proposition. . . . Please come into the office and we will draw up our standard form of contract." But some of the terms of the proposal were left blank. As to these terms, the Massachusetts court said:

"The failure of the plaintiff to include . . . an estimate of the amount of steel required for the work, and to fix the times at which portions of the work were to be completed, and the day of the month on which . . . payment was to be made, did not prevent the proposal's being an offer. Such provisions were not essential elements of an offer, since without them, an offer, if it ripened into a contract, was not too indefinite for enforcement."

Nor, said the court, was the proposal indefinite because it was based on the "present scale of wages," especially since the proposal was subject to prompt acceptance. The defendant's offer to draw up its "standard form of contract" did not imply that the acceptance was conditional upon the execution of the standard form.

Engineer collects for part performance

THE PROBLEM: It was agreed in writing between an architect—employed to furnish engineering and architectural services on hospital construction—and an engineer that the latter would perform the engineering services for a fee of 3 per cent "of the contracts let for the mechanical trades," and the electrical and structural trades. The writing did not define the services to be performed, nor the time for payment of the fees, nor fix any standards for performance. The employment terminated when the engineer refused to make changes in his plans demanded by the architect. (1) In the engineer's suit to collect pay, could the court receive testimony to show the understanding of the parties not expressed in the writing? (2) Did the engineer substantially perform his agreement, so as to be entitled to agreed fees, minus what the architect had to pay a third person to make the changes the engineer refused to make?

THE ANSWERS: (1) Yes. (2) Yes. (Antonoff v. Basso, 78 N. W. 2d 604, decided by the Michigan Supreme Court.)

Supplier to have interest

THE PROBLEM: A bond given by a school building contractor guaranteed payment to suppliers of materials to a subcontractor, but said nothing about an interest rate on such obligations. Was a supplier entitled to interest on the amount due him?

THE ANSWER: Yes. (Hollywood Wholesale Electric Co. v. Jack Baskin, Inc., 303 Pac. 2d 1049, decided by California District Court of Appeal, Second District, Los Angeles.)

Bridge approaches defined

THE PROBLEM: For construction purposes, is an approach to a bridge a part of the bridge?

THE ANSWER: It depends upon the facts of each particular case (Linn County v. Town of Central City, 78 N. W. 2d 809, decided by the Iowa Supreme Court.)

The court cited four of its previous decisions as supporting that statement. In this case the defendant town broke an agreement to share the expense of road and bridge improve-

ments with the county. When the county sued, the town relied on the fact that the question of sharing the expense of bridge approaches had not been submitted to a vote of the town electors. But the court said that the nature of the particular approaches as part of the over-all improvement was such that the town board had a right to make the contract without a vote of the electors under statutes empowering it to grade roads. Construction of the approaches involved grade fills in the road.

Apparently, the court was called

upon to decide just where a road becomes a bridge approach when there is a fill that connects with a bridge proper.

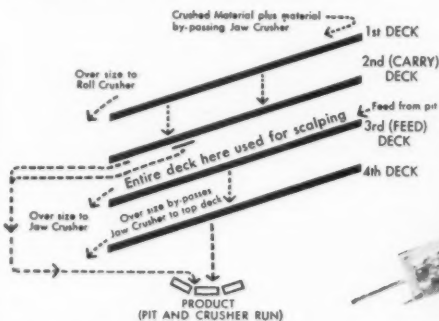
Priority claim against unpaid contract proceeds

THE PROBLEM: A municipal building contractor assigned the sureties on his payment-performance bonds the right to the contract proceeds, because they paid labor and material claims which the contractor was unable to pay. Nearly a month later, a

Now you can produce up to 4 sizes of graded material at the same time ... from a single plant

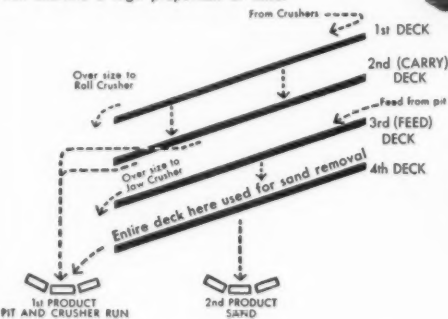
FULL DECK SCALPING CAPACITY

By using a full screen deck for scalping, pit run material that can be handled by the roll crusher is by-passed around jaw. Thus you get full use from each crusher.



FULL DECK SAND REMOVAL

A full screen deck can be used for sand removal ... a big factor in meeting specifications when pit run contains a high proportion of fines.



New multiple-production plant has king-size 4-deck screen for greater output, flexibility

PRODUCTION INCREASED EVEN MORE BECAUSE SMALLER ROCK BY-PASSES THE JAW CRUSHER

Here's the new king of portable crushing plants ... a plant able to turn out 4 different sizes of material at the same time ... and with greater capacity than any other portable plant you can buy!

These are strong statements, but field reports on performance of the new PIONEER 44-45 Plant series substantiate every word.

How crusher capacity was increased. These new giant-capacity plants have large capacity units. The 4' x 12' 4-deck vibrating screen is the largest used on any portable plant. The big 1036 jaw crusher and large roll crusher (3024 on the 44V and 4022 on the 45V) give plenty of crushing capacity.

But even more important is the high efficiency of the plant. For example, pit run material which can be handled by the roll crusher may be by-passed around the jaw by using part or all the third deck as a scalping screen.

Thus, jaw and roll crushers can be used 100% for crushing. Furthermore, the operator can equalize the load between crushers by adjusting the jaw setting while plant is in operation.

Even though the nature of pit run varies from time to time, the operator can thus keep each crusher working at full capacity ... without even leaving his platform or stopping the plant.

How effective screening area was doubled. Pit run is fed to the third deck and material from crushers is screened on top decks. Because first and second

decks are available for sizing material from the crushers, these new plants give double the effective screening area found in any other popular make plant.

A full sand screening deck is provided for quick sand removal if the pit run has a high proportion of fines.

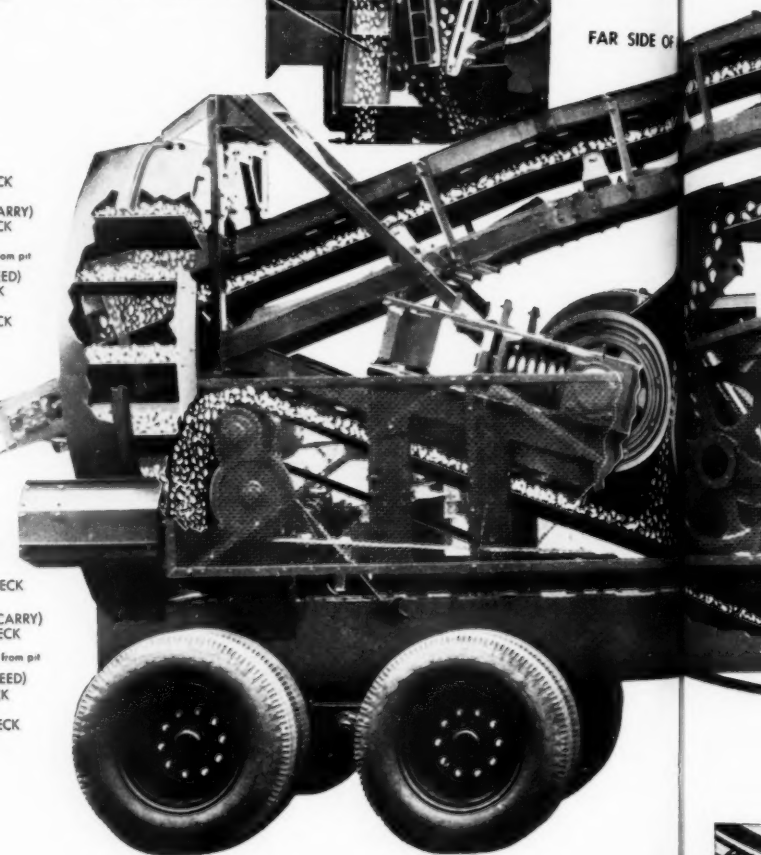
Produces 4 sizes of aggregates at same time. With their 4-deck screen, unique spouting arrangement, and ingenious method of routing material, these PIONEER Plants can produce up to 4 different sizes of material at the same time with close control of gradation.

Actually, 2 different sizes of fractured chips can be produced simultaneously without addition of extra equipment. Further, the chute-and-hopper arrangement makes it easy to either blend crushed material with pit run or remove each product separately.

Nine basic screen set-ups. With 9 basic screen arrangements to choose from, the operator is generally able to meet

TO THIRD (CHIPS) PRODUCT CONVEYOR

FAR SIDE OF



company, to which the contractor was indebted for liability insurance premiums, secured judgment against the contractor. Were the rights of the sureties to unpaid contract proceeds superior to those of the judgment creditor?

THE ANSWER: Yes. (United States Casualty Co. v. Met Contracting Corp., 158 N. Y. Supp. 2d 117, decided by the New York Supreme Court, Special Term, New York County.)

The court cited decisions of the New York Court of Appeals as supporting its conclusion. The court, also,

said that the judgment creditor had no rights under the New York Lien Law, because the claim for unpaid insurance premiums did not fall within the category of labor and material claims against the contractor.

Hoisting machinery was material furnished

THE PROBLEM: A Texas statute provides for assessment of an attorney's fee, as well as costs, when judgment is awarded on a sworn claim for labor or material furnished, but not paid

within 30 days. Under a dam construction contract hoisting machinery was installed under a subcontract and became a part of the structure. Was the machinery classifiable as "material," within the meaning of the statute?

THE ANSWER: Yes. (United States v. Texas Construction Co., 237 Fed. 2d 705, decided by the United States District Court, Fifth Circuit.)

The court said that attorneys' fees for which judgment could be awarded against the prime contractor and its surety included those

earned for services rendered in appellate proceedings; the subcontractor furnishing the machinery would be entitled to interest from the date the prime contractor's surety was notified of the contractor's failure to pay for the machinery.

Subcontractor's bond benefited materialmen

THE PROBLEM: A subcontractor's bond secured compliance with his agreement to "furnish all materials and perform all work as described". Did the bond bind the subcontractor to pay for such materials, although it contained no specific provision to that effect?

THE ANSWER: Yes. (Houston Fire & Casualty Insurance Co. v. E. E. Cloer General Contractor, Inc., 217 Fed. 2d 906, decided by the United States Court of Appeals, Fifth Circuit, upholding a judgment of the United States District Court, Northern District of Texas.)

The general contractor and its surety, having been held liable to the material man, successfully sought reimbursement against the subcontractor and his surety.

Contractor held liable for owner's negligence

THE PROBLEM: A structural-steel contractor agreed to erect steel on field bolt connections provided by the owner and to indemnify the owner against injuries caused by either party. The probable cause of injury to an employee of the contractor was the defective condition of the bolt to which an H-column was attached. Was the contractor, rather than the owner, liable to the injured employee even though the accident had been brought about by the owner's negligence?

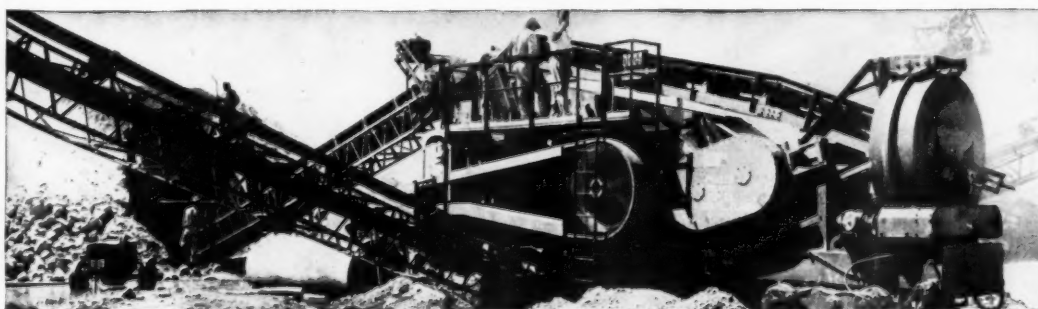
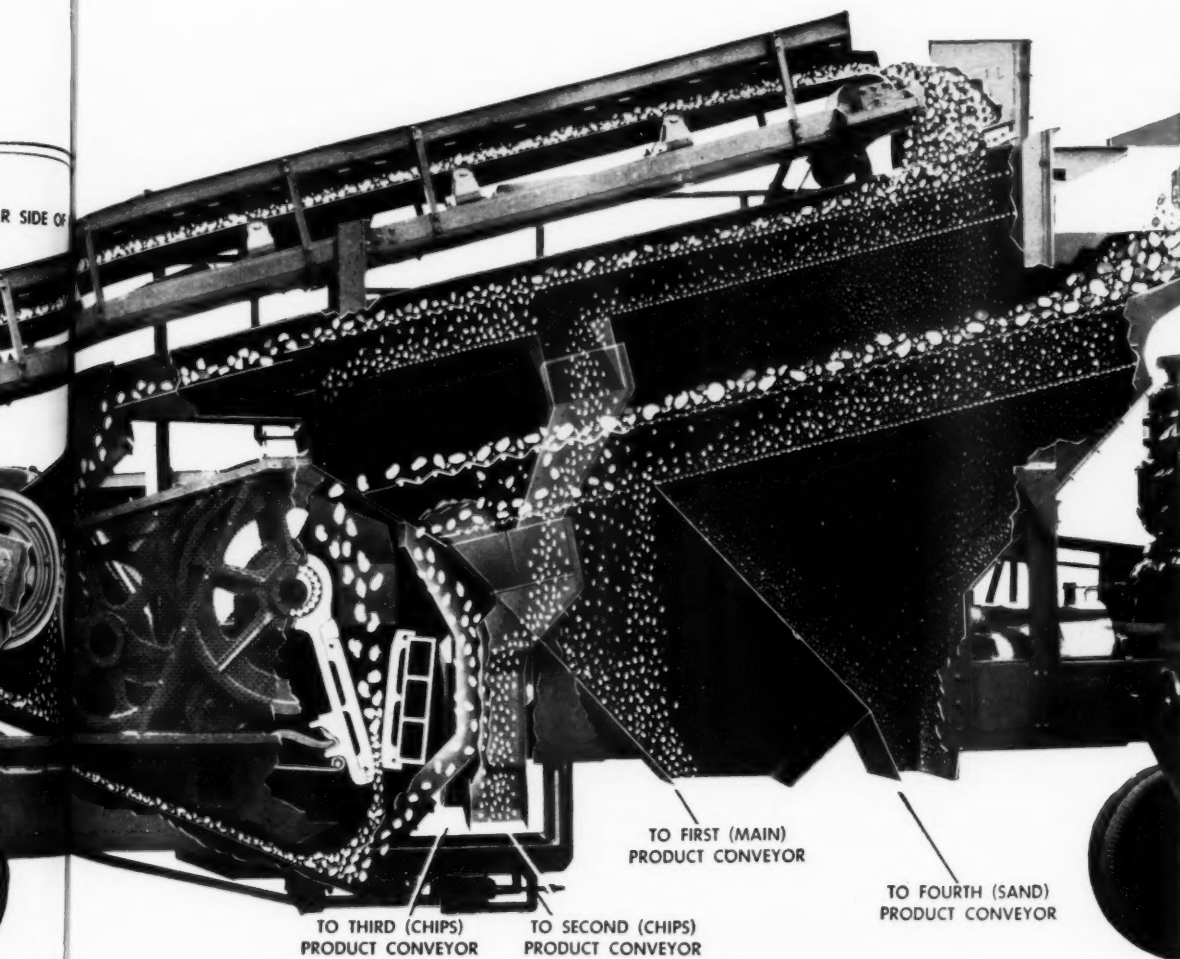
THE ANSWER: Yes. (Dayton Fabricated Steel Co. v. Dayton Town & Country, Inc., 133 N. E. 2d 423, decided by the Ohio Court of Appeals, Montgomery County.)

The court said that it is desirable that contractors agree to so indemnify owners because it avoids the necessity of determining whose fault has caused a third person to be injured. The decision suggests that contractors should ascertain whether their liability insurance policies are broad enough to protect them against loss where liability to third persons for an owner's fault is assumed.

Employee is killed unloading freight car

THE PROBLEM: A railroad car was spotted on a spur track for unloading pipe by contractor's employees. One of them was fatally injured when thrown from the car by the impact of other loaded cars, which had been released on a down grade and could not be stopped because of defective brakes. Was the railroad liable?

THE ANSWER: Yes. (Southern Railway Co. v. Jones, 228 Fed. 2d 203, a Tennessee case decided by the United States Court of Appeals, Sixth Circuit.)



the most exacting aggregates specifications regardless of pit conditions.

New screen suspension absorbs vibration. Instead of being mounted rigidly on its base in the usual manner, the big 4-deck screen floats on a dual set of heavy coiled springs mounted at each corner of the main screen frame.

This new and exclusive PIONEER feature avoids transferring vibration to the supporting structure and also increases screening efficiency.

Meets weight, height, width, limits. With an approximate equalizer loading of 34,000 lbs., plants will comply with most highway load limits.

Travel length is only 32'3", width

9'6". Travel height is approximately 13', operating height 14'8".

44 and 45 Series Plants are available with either mechanical or electric drives except that jaw and roll crushers are always mechanically driven.

Typical performance report: Near Yuma, Arizona, Arrow Construction Company's 44V (shown above) is producing road materials at a 435 tph clip. 350 tph consists of 1 1/2" to 3" aggregates for base course, 9 tph of 3/4" to No. 10, and 75 tph sand.

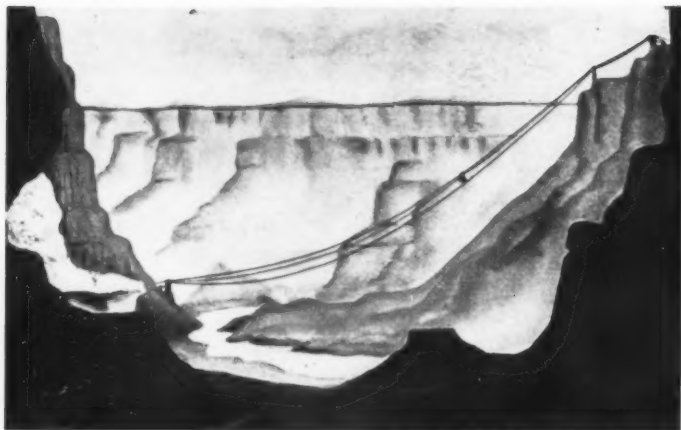
Walter Norton, the owner, compares his new 44V with previous plants and reports, "In our opinion the PIONEER 44V is the best portable plant ever built".

If you, too, wish to lower your cost-per-hour of producing aggregates, it will pay you to see your PIONEER Distributor or write Pioneer Engineering, Division of Poor & Company, Inc., Minneapolis 14, Minnesota.

Pioneer ENGINEERING

Division of Poor & Company, Inc.
MINNEAPOLIS 14, MINNESOTA

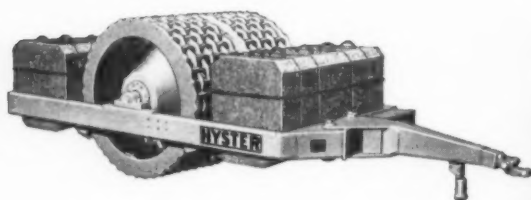
For more facts, use Reader-Reply Card opposite page 18 and circle No. 251



An artist's conception of the 9,400-foot aerial freight tramway shows the tramway terminal at Bat Cave, lower left, where the guano is put into a loading bucket. The bucket, traveling up the cableway, will be unloaded at the rim of the canyon, packed, and shipped to Los Angeles for distribution.

Helicopter strings cable for Grand Canyon tramway

**HIGH-SPEED
COMPACTION**
**LOW-COST
ROCK CRUSHING**
**EFFICIENT
BITUMINOUS SALVAGE**



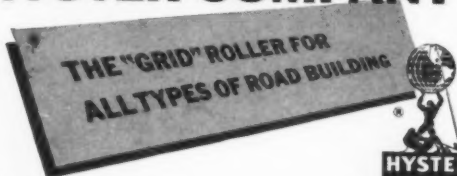
Here is the machine road builders all over the world are using on all types of road construction — free-ways, secondary roads, farm-to-market roads, access and logging roads.

Built for long life on any job—rock surfacing haul roads or high-speed compaction on expressways—the "Grid" roller is designed to give you low cost operation and maintenance. Its high capacity tapered roller bearings give long life. Its high-strength cast steel wheels resist wear in rock and abrasive materials. The heavy-duty frame prevents distortion in the toughest going.

"Grid" is the registered trademark for the Hyster open-surfaced roller. Caterpillar is the registered trademark of the Caterpillar Tractor Co.

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**THE
HYSTER
"GRID"
ROLLER
DOES ALL
THREE!**



1 EMBANKMENT COMPACTION—High-speed rolling (up to 15 MPH towed by Caterpillar DW15 Tractor) matches compaction with yardage of high-speed earth movers.



2 ROCK CRUSHING—Pit-run rock quickly and efficiently crushed for base and surface courses on secondary road construction and repair.



3 BITUMINOUS SALVAGE—Quickly breaking down old ripped-up mat, the "Grid" Roller salvages all of the original aggregate and reusable binder for use in new surface.

A "turn-key" job—one carried on from drawing board to actual completion—made possible a large single-span aerial freight tramway now operating in the Grand Canyon. The tramway, consisting of 11,500 feet of 1/4-inch construction cable stretched 1 1/2 miles across a river gorge to Bat Cave, will eventually carry 100,000 tons of bat guano for fertilizer and for ingredients of modern medicines. The entire job was planned and built by the Consolidated Western Steel Division of U. S. Steel Corp., New York, N. Y., working with New Pacific Coal & Oils Ltd., Toronto, Canada.

Since there is no road or trail to the bottom of the canyon in the vicinity of Bat Cave, all equipment, personnel, and supplies used by Consolidated Western had to be flown in from a base at Kingman Airport, Kingman, Ariz. This included 30 tons of steel; 85 tons of sand, gravel, and cement for foundations; two air compressors, hoists, welding machines, cement mixers, and a 2-ton truck.

Cable work

A helicopter strung the first of four cables across the 2,911-foot deep gorge, before the permanent 1 1/2-inch track cable was suspended from three towers. The towers support the tram-

**BUY BIG ORANGE AND
YOU BUY THE BEST**

Shackle Chain HOOKS

Use on "HIGH TEST" Chain

EXTRA STRONG

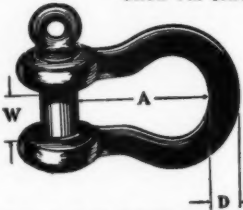
Even the pin is made of hi-strength steel and heat-treated

SAVES TIME
Can be attached anywhere on the job. Only a pair of pliers needed.

GRAB HOOKS
Available for Chain Sizes 1/2", 5/16", 3/8", 7/16", 1/2", 3/4"

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Available for Chain Sizes 1/2", 5/16", 3/8", 7/16", 1/2", 3/4"

ANCHOR and CHAIN
Screw Pin SHACKLES



Forged of HI-STRENGTH STEEL
Available in sizes 1/4" to 2". EXTRA STRONG—EXTRA TOUGH. Self-colored or galvanized. Order from your Distributor or Write

MIDLAND INDUSTRIES, INC.
Cedar Rapids, Iowa

For more facts, circle No. 253

CONTRACTORS AND ENGINEERS

System, spanning 9,400 feet over deep gorge, will be used to tap prehistoric guano deposits

way cable over its 9,400-foot route from loading to discharge terminals.

The guano, picked up by a vacuum, is carried about 1,000 feet through a 10-inch pipe to a bag house where the air and guano is separated. The guano then drops into loading bins of the lower tramway terminal where it is diverted into the tramway bucket. At the rim of the canyon it will be packed in 5, 10, and 25-pound sacks, hauled 60 miles by 20-ton trailers to a warehouse in Kingman, and shipped by rail to Los Angeles for national distribution.

Other attempts

The 60-million year old cave was discovered in 1930, but Consolidated Western is the only firm that successfully removed the guano. Previous attempts were unsuccessful because of the Colorado River's treacherous currents and sand bars. Other firms tried flying guano out by helicopter and airplane, but these methods proved too costly.

A year-round constant temperature of about 70 degrees and a lack of measurable humidity within the cave has helped to retain the valuable chemical properties of the guano. It contains 10 to 16 per cent nitrogen, with considerable phosphate and potash content. In powder form or its natural state, guano is a high-grade, odorless, organic fertilizer. Research has isolated such drugs as uric acid, allantoin, xanthine, hypo xanthine, guanine, and adenine alloxan from the material.

THE END

Diesel power plants

A 19-page catalog outlining its complete line of power units for all types of applications has been issued by the Detroit Diesel Engine Division of the General Motors Corp. Specifications are given for 31 engine models ranging from 44 to 761 brake horsepower. Included is the new six-cylinder Turbopower engine.

Five reasons why Detroit Diesel engines cut operating costs and increase production are listed and discussed. Such features of the line of engines as the Uniflow air system, the two-cycle principle, the unit injector fuel system, and maximum parts interchangeability are explained.

To obtain Form 6SA43 write to the Detroit Diesel Engine Division, General Motors Corp., 13400 W. Outer Drive, Detroit 28, Mich., or use the Request Card at page 18. Circle No. 60.



Taking off from the rim of the Grand Canyon, the helicopter starts its job of stringing 1/8-inch construction cable across the river gorge to Bat Cave. Three other cables were strung across the 2,911-foot-deep gorge before permanent 1 1/2-inch cable was suspended from three towers.

Steel user's catalog

A 232-page catalog designed for steel users and purchasing agents is announced by the Crucible Steel Co. of America. The catalog describes more than 700 steel products available from Crucible.

The book index lists 16 categories of special-purpose steels, including high-speed, tool, stainless, alloy, and material steel, available in 16,000 grades and sizes. Over 20 estimating, conversion, and weight tables, as well as other information for steel users are included.

To obtain this catalog write to the Crucible Steel Co. of America, Engineering Service Dept., Box 88, Pittsburgh 30, Pa., or use the Request Card at page 18. Circle No. 27.



These two Allis-Chalmers HD-21 Tractors—which net 200 cu. yds. per hour on an uphill haul for Grannis & Sloane, Inc., Fayetteville, North Carolina—are equipped with A-C Torque Converter Drive, standardizing on Twin Disc Torque Converter components.

"Torque Converter tractors net us 200 cu. yds. per hour ... and the haul is uphill all the way!"

That's the report from Fred Hauck, hard-working superintendent of Grannis & Sloane, Inc., Fayetteville, North Carolina.

He's talking about two Allis-Chalmers HD-21 tractors, working on a 3,800,000-cu. yd. grading and excavation job at Duke Power Company's new Plant Allen in Belmont, North Carolina.

They're used to push-load motorized scrapers in making a 6300 ft.-long discharge canal—a 2,200,000-cu. yd., uphill earthmoving job. With the torque converter-equipped tractors, Mr. Hauck is hitting well over 200 cu. yds. per hour on a 1500-ft., one-way haul—most of it on a 5% uphill grade out of the canal.

"These HD-21's, with torque converters," says Mr. Hauck, "have made one of the roughest jobs we've ever

tackled much easier. They've saved us a lot of time and money."

Torque converter drive offers you higher work output in less time, and longer equipment life because it matches power to load demand, automatically, thus minimizing or eliminating gear shifting . . . it eliminates harmful engine lugging and stalling . . . it cushions out—through fluid connection—overloads, shock loads and vibrations—providing longer tractor life with less maintenance.

For these reasons, Allis-Chalmers designed torque converter drive into the HD-21, as standard equipment (it is optional on the HD-16). Since the inception of torque converters in crawler tractors in 1940, Allis-Chalmers has standardized on Twin Disc Torque Converter components.

Specify a torque converter for your

next HD-16. For details on Twin Disc Torque Converters—single-stage and three-stage—request Bulletins 508 and 135-E, respectively.



TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois
BRANCHES OR SALES ENGINEERING OFFICES: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • TULSA
For more facts, use Reader-Reply Card opposite page 18 and circle No. 254

Computer calculates rise in jobs and products to be created by road program

**Economic effect of highway building calculated in 40 seconds;
total of 36,500 multiplications and 110,000 additions made**

The direct and indirect effects of the \$100 billion roadbuilding program—difficult even for economic experts to grasp—was calculated in just 40 seconds by a giant electrical computer.

After making approximately 36,500 multiplications and 110,000 additions, the machine came up with figures

showing that the huge highway program will generate an average of some 880,000 jobs in industry. But this was not all. The IBM 704 electronic data processing system went on to figure the program's effect on each of the industries.

Some of the more impressive figures, as might be supposed, concerned the production of products, such as cement and steel, that will be consumed directly by the highway program. Cement output, according to calculations, will go 28 per cent above last year's level; steel production is in for a 3.2 per cent rise.

The total annual business to be created was figured not only for products needed by roadbuilders, but also items produced by the 190 industries in which the entire economy is divided. The computations did not include additional requirements for such things as automobiles, new motels, household demands, or the capital replacement or capital construction required if industries are to produce more goods and services.

The required average annual output of products essential to the highway program, figured as a percentage of the 1956 output, comes to .3 for petroleum products, 3.2 for tires and tubes, 1.2 for miscellaneous rubber products, 28 for cement, and 1.8 for structural clay products.

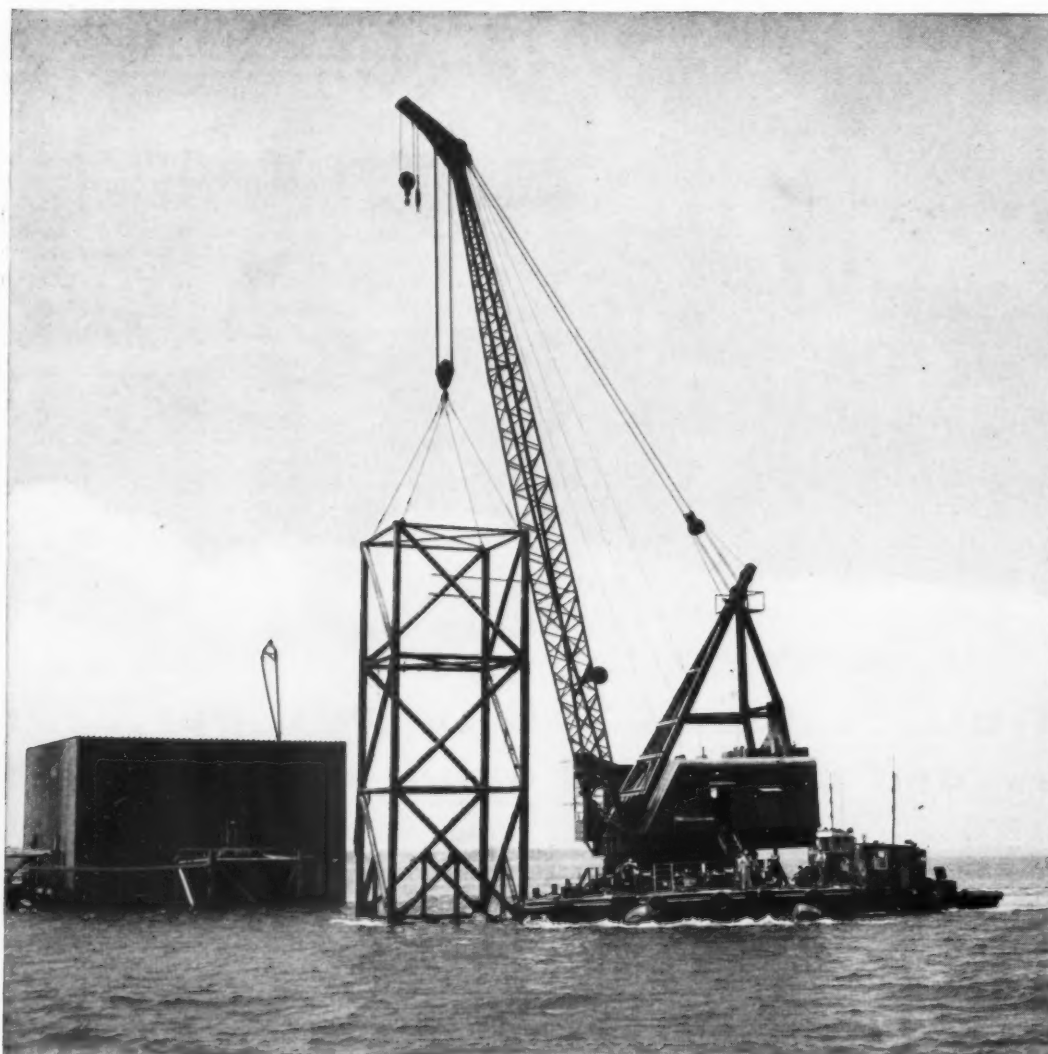
Among the primary metals needed, the percentage rise will be 1.7 for copper and 1.4 for aluminum, while structural metal products will experience a rise of 17.7 per cent, according to the analysis.

The computation of the business to be created by the highway program formed an impressive send-off for the opening of the new Computer Services Division of the Council for Economic and Industry Research, Inc., (C. E. I. R.) Arlington, Va., the country's first independent, commercial computer service.

The private research organization, founded in 1952 with its main office in Washington, D. C., aims to use the International Business Machines' large-scale computer in tackling programming problems for all types of equipment; in formulating, analyzing, and developing procedures for handling all types of data processing and computing; and in designing complete data-processing systems for a variety of organizations. The new Computer Services Division, under the direction of William Orchard-Hays, a specialist in electronic computer operations, is already carrying on work on such things as transportation programs, plant location studies, and general operations research.

THE END

CONTRACTORS AND ENGINEERS



WIRE ROPE AT WORK

A great bridge is not erected overnight, and months of dogged effort are required before the span begins to take shape. Here's a scene that was common during the early work on the Rappahannock River Bridge—a \$15,000,000 project in eastern Virginia. When completed, the bridge will link White Stone and Greys Point,

thereby crossing the river at one of its broadest parts.

The photograph shows equipment of the Diamond Construction Company positioning a guide tower. The crane was rigged with Bethlehem wire rope, 1-in. Purple Strand. Bethlehem rope was also used for handling caisson domes, and for excavating through the caisson wells. Almost anywhere you looked, in fact, some of this tough steel cable could be seen in action, lifting, lowering, or pulling heavy loads.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributors: Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 255



The new Model D Tournatractor has a planetary steering system which permits turns while maintaining full power on all four drive wheels.

Rubber-tire 143-hp rig has top speed of 19 mph

■ A 143-hp rubber-tire prime mover with a top speed of 19.3 mph has been introduced by the LeTourneau-Westhouse Co. The new Model D Tournatractor has a planetary steering system which permits turns while maintaining full power on all four drive wheels.

The steering system is operated by air-pressure controls triggered by conventional steering levers. It automatically adjusts sharpness of turn to forward speed to provide safe, sure control under all conditions, the company reports. At 2 mph, it allows a turn radius of approximately 9 feet, while at the top speed of 19.3 mph, the orbit extends to just under 100 feet.

A four-cylinder diesel engine is combined with a five-speed earth-mover-type transmission to power the Model D Tournatractor. It rides on 25:00x18 low-pressure rubber tires. The mechanical power control unit for handling scraper and other cable-controlled equipment is rear mounted. The Model D also accommodates an 8-foot bulldozer and an 8½-foot snow-plow.

For further information write to the LeTourneau-Westhouse Co., 2301 N. Adams St., Peoria, Ill., or use the Request Card at page 18. Circle No. 23.

Concrete saw equipment

■ A folder describing Concut concrete sawing equipment manufactured by Concrete Sawing Equipment, Inc., is available from the company. The folder covers three standard-type saws; two models of the Jointmaster transverse sawing machine, which has two or more traversing saws mounted on a stationary carriage which spans the slab, riding on either the forms or the concrete; and a precision bump cutter for planing concrete and asphalt surfaces.

A photograph, description, and specifications for each of the units is given. Also included is information on Concut Supreme diamond blades and Concut abrasive blades.

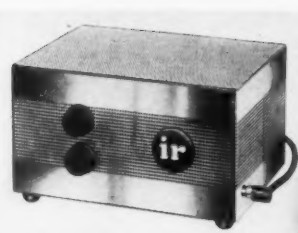
To obtain Bulletin No. 18 write to Concrete Sawing Equipment, Inc., 331 N. Santa Anita Ave., Arcadia, Calif., or use the Request Card at page 18. Circle No. 133.

Utility radio receiver for 2-way VHF systems

■ A compact FM utility radio receiver for two-way VHF systems is announced by the Industrial Radio Corp. The Volunteer is available for mobile or standard installation. The mobile model measures 4x6x8 inches.

The small set uses an improved dual conversion superheterodyne circuit which employs a crystal for tuning stability. A squelch circuit silences the receiver between calls. Because the set is designed for single channel use, the only adjustments are for volume and squelch setting.

The ac high band model employs 15 tubes, and has a built in loudspeaker and power supply. The mobile model uses power transistors in the



The Volunteer is a compact single channel FM utility radio receiver for two-way VHF systems.

output to keep battery drain at a minimum. The antenna terminal is designed to accommodate an ordinary automotive antenna.

For further information write to the Industrial Radio Corp., 428 N. Parkside Ave., Chicago 44, Ill., or use the card at page 18. Circle No. 132.



ROUND CONCRETE BUCKETS
Select from 17 models of Gar-Bro Buckets ranging from 1/2 to 8 cu. yds. There are types for handling any concrete from normal slump to the driest low slump. All have Gar-Bro patented, self-closing, double clamshell gates—they are non-jamming and grout tight. Large buckets have air-operated gates with pull chain or remote control.



ACCORDION RUBBER HOPPERS (Patented)
Only Gar-Bro Buckets can be equipped with an Accordion Hopper. It is an exclusive patented bucket attachment that confines concrete when pouring into narrow forms. It fastens directly to gate and opens and closes with the gate.

Only GAR-BRO offers

A COMPLETE SELECTION

of concrete handling equipment

ONLY GAR-BRO SPECIALIZES in concrete handling equipment. And only Gar-Bro has a complete line of more than 300 equipment items to give you a complete selection of types and sizes to suit your concrete placing job. Gar-Bro's 30 years of experience makes a big difference in the ease of operation... in the efficiency... and in the extra advantages of Gar-Bro equipment for concrete handling—there is no substitute.

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LAYDOWN BUCKETS
They lay down and roll over to a low loading height and automatically resume a vertical position when lifted. 16 standard models ranging from 1/2 to 3 cu. yds. of three types to suit any job.



PORTABLE HOPPERS
6 Models with three types of mountings are available in the Gar-Bro line. They save truck mixer waiting time and prevent delay of the cart crew and finishers. Have low (70" to 75") loading height and 36" clearance for cart loading.



CONCRETE CARTS
All carts are not the same. Gar-Bro Carts are "balanced" — when loaded... easier to handle... easier to push. 3 sizes: narrow and standard 6 and also 8 cu. ft., rocker dumps.



COLLECTION HOPPERS
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POWER-CART
Designed for Concrete Handling and for faster, safer operation on temporary runways. Handles 12 cu. ft. ... turns in 4' radius ... controls dumping ... operates on 2 gal. of gas per day. Light and fast either forward or reverse.



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Write for catalog and Concrete Handling Manual.



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Crushing and screening operations, concrete batching, and hot-mix production for three different projects are carried on simultaneously in this borrow pit near the Portsmouth approach to the Sakonnet River Bridge, Rhode Island.

(additional photo on front cover)



The 1 and 2-inch stone and sand are charged to the Blaw-Knox bin by a crane with a 70-foot boom and 1½-yard clamshell. Aggregate for three batches is picked up by the Ford F-8 truck in drive-through loading.

A crushing and screening unit, a concrete batch plant, and a hot-mix plant, set up at one convenient location, supplied the materials needed for three separate road contracts amounting to more than \$4,300,000.

This setup produced the stone for the base courses and asphaltic-concrete paving for a 2-mile, \$500,000 reconstruction of Turnpike road and a 7-mile, \$1,800,000 relocation of West Main Road, both in Portsmouth, R. I. It also provided asphaltic-con-

crete for the 2,300-foot-long Tiverton approach to the new Sakonnet River bridge and cement-concrete surfacing for the 6,500-foot-long Portsmouth approach to the bridge. The bridge approaches, located on an entirely new grade, were built under the third contract, which amounted to more than \$2 million.

M. A. Gammino Construction Co., Providence, R. I., set up the three units in a pit that supplied the more than 600,000 cubic yards of borrow

needed for the Portsmouth approach.

Gammino used Caterpillar DW21 scrapers to remove about 50,000 yards of topsoil, and Ingersoll-Rand wagon drills to help remove more than 35,000 yards of rock for both approaches.

The 6,500-foot-long Portsmouth approach required more than 600,000 cubic yards of borrow, which was loaded out to Euclid bottom-dumps at the borrow pit by a Euclid loader. This material brought the roadway



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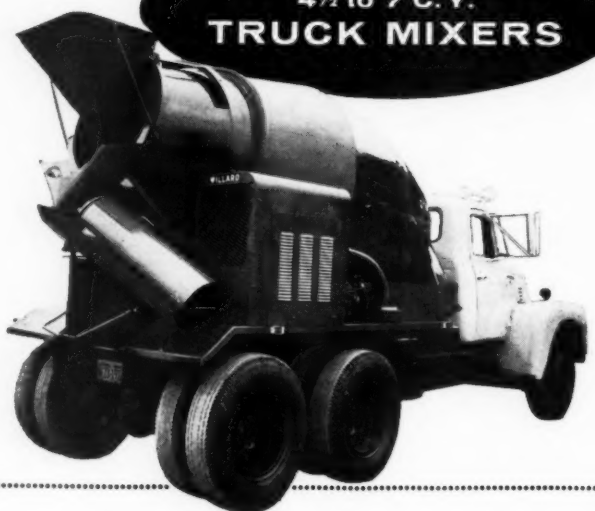
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CONTRACTORS AND ENGINEERS



Rock retained by the two lower decks of the second Seco screening unit is deposited in bins, while a third size running off the 1-inch screen is stockpiled, foreground. The other conveyor stockpiles rock passing the first screening unit.

handle three road jobs from one setup

up to grade and backfilled an area where over 120,000 yards of peat had been removed by 2½ and 1½-yard draglines. Compaction on the grade was done by Buffalo-Springfield 10-ton tandem rollers.

Concrete batch plant

With base work and paving ready to get under way, Gammino established his triple setup at the borrow pit. Supplying the ingredients for the 8-inch-thick reinforced-concrete slab

of the Portsmouth approach was a Blaw-Knox aggregate bin and cement silo. Aggregates, shipped in from a commercial source by truck and stockpiled in three piles—2-inch-stone, 1-inch-stone, and sand—were handled by a crane equipped with a 1½-cubic-yard clamshell bucket on a 70-foot boom. The aggregate bin was arranged for drive-through loading and for charging with little or no movement of the crane.

(Continued on next page)



Existing pavement on the West Main Road is removed by a Koehring 1½-yard shovel and hauled to waste by one of a fleet of Mack 12-yard trucks. The relocation involved widening the roadway to 48 feet.



Some of the 80,000 yards of rock blasted during excavation for the relocated West Main Road is loaded to a Euclid 14-yard rear-dump with hydramatic drive by a shovel with a 2½-yard bucket.



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Brunner & Lay carbide Rok-Bits drill round, easy-to-load holes—provide better chip clearance—with bit working in rock, not its own cuttings—and offers deep seated, generous carbides that stay put to give you big daily yardages at lowest cost.



Brunner & Lay Rok-Bits and drill steel used on the wagon drills kept ample rock ahead of the shovels. For details on this and other important low-cost Rok-Bit blast hole drilling jobs, call our nearest office. Ask for NEW catalog #756.

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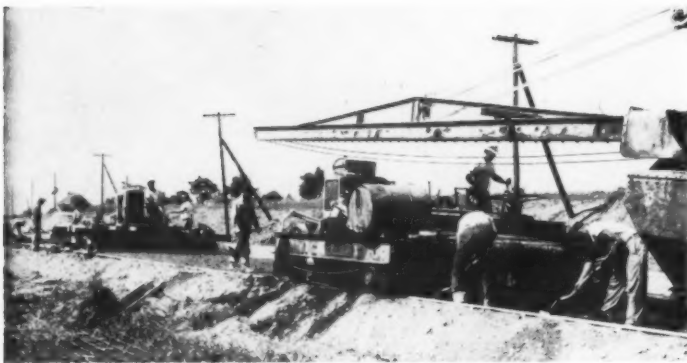
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Standard Steel Works, Inc. NORTH KANSAS CITY, MO.

PD-157

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The Blaw-Knox spreader makes a second pass to bring the concrete to the desired 8-inch thickness. Hand lute finishing is done behind the Blaw-Knox transverse double-screed finisher.

(Continued from preceding page)

Bulk cement for the 400-barrel hopper and silo was delivered by rail to Portsmouth, where it was unloaded into a screw conveyor feeding a storage hopper and silo. Here, trucks picked up cement for delivery to the batching setup. The same procedure was used as trucks unloaded cement: the material was unloaded into a screw conveyor, went up a 70-foot enclosed elevator, and into the 400-barrel silo or 400-barrel hopper.

Both the aggregate bin and the cement hopper were equipped with a Fairbanks-Morse scale that weighed out the proper amounts of stone, sand, and cement. An electronic release, installed on the cement hopper, could only be actuated after the exact

amount of cement had been measured out. This assured the contractor as well as the state highway inspectors of an accurate mix.

Five Ford F-8 batch trucks, each with a 3-batch capacity, were first loaded with 1,600 pounds of sand, 1,220 pounds of 2-inch stone, and 1,220 pounds of 1-inch stone per batch at the aggregate bin. Then they drove to the cement silo to pick up 795 pounds of cement per batch.



Loaded with aggregates, a Ford truck picks up cement at the Blaw-Knox 400-barrel-capacity cement hopper. Cement delivered by truck is transferred to either the silo or 400-barrel hopper by the 70-foot enclosed elevator.

Reinforced slab

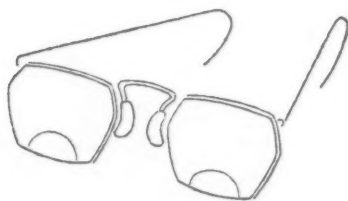
Gammino used 8-inch keyed forms to place the four 12-foot lanes of the Portsmouth approach road, and had form stakes driven by a pneumatic hammer powered by a Worthington air compressor. Both roadways are separated by a grass median that goes from 16 to 4 feet in width as the approach nears the bridge with its 4-foot concrete divider.

A Ransome 34-E paver dumped concrete batches between the forms and ahead of the Blaw-Knox spreader that made an initial pass to level the concrete off at a 4-inch depth. After workmen had placed wire mesh reinforcing over this lift and the spreader moved back to make another pass, the paver dumped additional batches at the same location. A second pass of the B-K spreader brought the concrete to the desired 8-inch thickness.

The spreader was followed by a Blaw-Knox double-screed transverse finishing machine that leveled the concrete ahead of the hand lute finishing operations. The surface of the concrete was brushed to give it the desired texture before Sisalkraft curing paper was placed.

Joints were spaced every 73½ feet. They were formed by supporting commercial cork filler on wire chairs, then using the filler to support 12 steel dowels. By placing a 2-inch-deep cap over the cork joint to permit continuous paving operations, and removing the cap before initial set of the concrete, Gammino obtained a 2-inch gap. This was filled with an asphaltic filler that made the joint waterproof. After 24 hours, the forms

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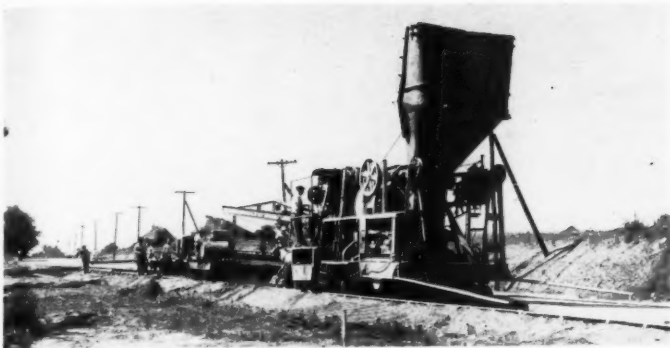
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Concrete paving on the Portsmouth approach to the Sakonnet River bridge is done by a train led by a Ransome 34-E paver. After the Blaw-Knox spreader levels the concrete to a 4-inch depth, workmen will place reinforcing.

Durastone curbing is set on the relocated Turnpike Road by a crew using a Willys Jeep to handle the stone. The Jeep has a contractor-rigged hoist powered from the take-off, heavy-duty tires, and extra frame bracing.



were stripped, the form stakes being removed manually with a pin puller.

Relocation job

Gammino's hot-mix plant at the borrow pit did double duty, supplying paving material for both the Tiverton approach and for the reconstruction of Turnpike road and West Main Road in Portsmouth.

The 2,300-foot-long Tiverton approach, which ties into existing arteries, consists of four 12-foot asphaltic-concrete lanes with a 1½-inch binder course and a 1½-inch wearing surface.

The 7-mile stretch of West Main Road consists of a 5-inch lift of crushed base stone topped with a ½-inch penetrated macadam course covered with a 1½-inch binder and 1½-inch wearing course.

In relocating the West Main Road, which was widened from 22 to 48 feet, Gammino removed more than 80,000 cubic yards of rock, practically all of which was wasted. Blast holes with depths of more than 18 feet were sunk into the rock by an Ingersoll-Rand Quarrymaster equipped with a 6-inch carbide insert bit. Ingersoll-Rand wagon drills with 2½-inch carbide insert bits were used to punch holes in the rock to an 18-foot depth. The wagon drills were powered by Ingersoll-Rand 600 air compressors.

The deepest cut on this job was 35 feet. Blasted rock was loaded into a fleet of Euclid 14-yard rear-dumps by shovels with 2½-yard buckets. The Euclids, equipped with hydramatic drives, emptied the material at waste areas.

The pavements of existing roads on the West Main and Turnpike Road stretches were broken up by a Koehring 1½-yard shovel. Waste was loaded into a fleet of Mack 12-yard dump trucks for disposal.

Crushing and screening unit

Base course and hot-mix aggregates for the approach and reconstruction projects were turned out at the old borrow pit by Gammino's crushing plant. Rock was hauled to the plant by Mack dump trucks and emptied into a hopper feeding a Goodall 30-inch conveyor belt on a 100-foot-long Madsen conveyor. The rock dumped off the inclined belt to a Seco 4×12-foot double-deck vibrating screening unit having 1-inch

(Continued on next page)



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This McCarter 5,000-pound-per-minute asphalt plant is set up to supply paving material for the Tiverton approach to the bridge and two road relocation jobs. Aggregates are supplied by the crusher, a few hundred feet away in the borrow pit.

(Continued from preceding page)

openings on the top deck and 1/2-inch openings on the bottom. All rock passing through both screens was caught on an 18-inch inclined belt riding a 110-foot long Madsen conveyor that dumped to a stockpile classified as sand.

Oversize rock running off the top deck of the Seco screening unit was caught and run through a chute into a Telsmith 13x24 jaw crusher. The runoff from the second deck went through chutes into a Symons cone crusher. Crushed rock from both crushers was then discharged onto the main 24-inch conveyor belt that fed a second Seco screening unit that consisted of three 4x12 vibrating screen decks.

Runoff from the top 1-inch screen was caught by a chute that bypassed the two 30-ton storage bins beneath the screens and deposited the material onto an outer belt dumping to a second stockpile. Rock running off the second 3/4-inch screen was classified as 1-inch stone and was deposited in the outer storage bin. Material off the third 1/4-inch screen, classified as 3/8-inch stone, was deposited in the other bin. All stone passing the three screens was washed out to waste. Electric power, purchased from the local supply, powered the electric motors driving the conveyor belts and crushers.

Asphalt plant

In addition to supplying base-course aggregates, the crusher supplied aggregates for Gammino's McCarter 5,000-pound per minute hot-mix asphalt plant, located a few hundred feet away in the borrow pit. This plant had already turned out over a total of more than 225,000 tons of asphaltic-concrete mix for the Gammino jobs. Throughout the paving operations it averaged 120 to 140 tons of mix per hour.

Liquid asphalt, with an 85 to 100 penetration, was delivered in 4,500 gallon tank trailers from Koppers Co., Inc., East Providence, R. I., and stored in a 10,000-gallon heated tank. The original steam-heating equipment installed to heat the liquid asphalt was replaced by a Hynes electrically-operated heating system.

Aggregates consisting of sand, 3/4-inch stone, and 1-inch stone were hauled from the crushing plant by dump trucks and emptied into three storage hoppers at the asphalt plant. A conveyor belt transferred the aggregate to the 6-foot-diameter, 32-foot-long dryer that was fired by a Hopkins oil burner.

Passing through the inclined dryer, the stone was picked up by an enclosed bucket elevator that deposited the dried material into a Tyler triple-deck screening unit atop the plant's hopper. Here, the aggregate was separated and stored in the bin compartments and weighed out by a Howe scale before being dumped into the pugmill. The plant was also equipped with a dust collector powered by a General Industrial blower.

As paving got under way on the 2-mile Turnpike Road relocation, Gammino had two specially rigged Willys Jeeps handle the job of placing the Durastone precast concrete curbing that flanks the 40-foot asphaltic-concrete pavement. The Jeeps were equipped with hoists rigged by the contractor and powered from a rear take-off, and they were fitted with heavy-duty tires and additional frame bracing for extra strength. These rigs worked efficiently, picking curbing off the delivery truck and transporting the stones to the desired location along the road.

Personnel

William Cimini was the general superintendent on all three contracts

Roadbuilders!

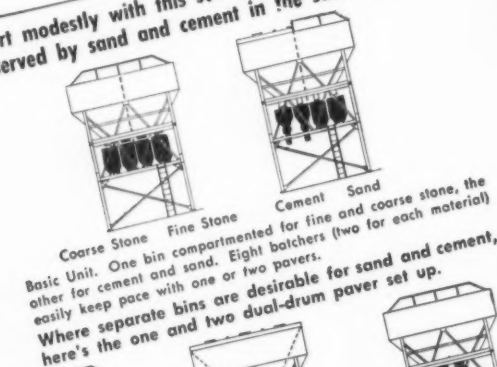
START WITH ONE PAVER... GROW with the BUTLER TX-4!

New Butler One-Man Batching System Matches 1, 2, 3 or 4 Dual Drum Pavers

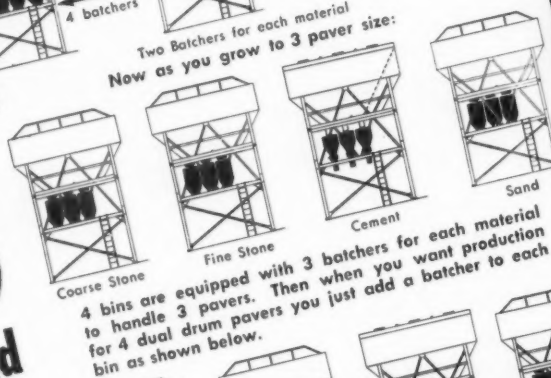
The New Butler TX-4 Roadbuilder Plant offers you ONE MAN operation with ultra-high speed automatic batching — no matter if you operate one paver — or two... or three... or four... or more!

You can start modestly with this set up if your operation is best served by sand and cement in the same bin

1
or
2
pavers



3
and
4
pavers

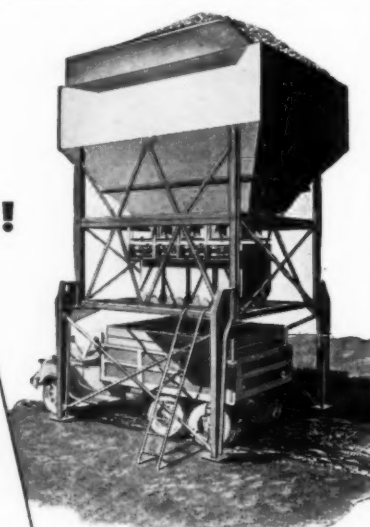


So no matter how modest or how large your paving operation, the versatile, highly portable, completely automatic Butler TX-4 fits your requirements like stretchable socks.

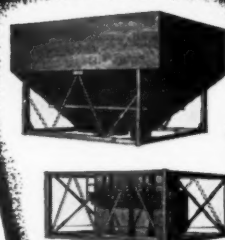
BUTLER BIN COMPANY

971 Blackstone Ave. • Waukesha, Wisconsin

For more facts, use Reader-Reply Card opposite page 18 and circle No. 263



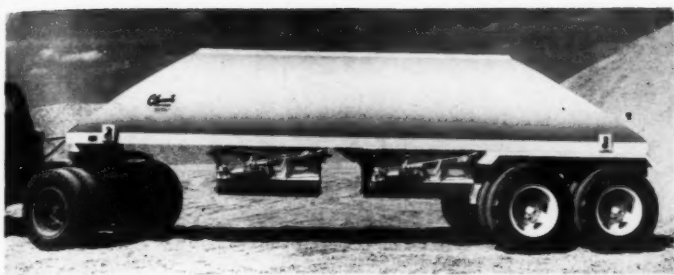
Typical automatic TX-4 bin and batcher. Controls are pre-set on each bin, operate by push-button.



TX-4 is the most portable ever designed. Bins completely pre-assembled for easy crane handling. Batcher units, handled with piping and wiring in place.



The Butler TX-4 is described right down to the nuts and bolts in this fact-packed Bulletin. Send a post card today. Just ask for Bulletin TX-4.



The new Clement-Braswell bottom dump trailers can be unloaded while they are moving, thereby speeding hauling operations. The units are available in 10 and 15-cubic-yard capacities.

Bottom-dump trailers dump while moving

■ Bottom-dump trailer units with single or tandem axles and capacities of 10 and 15 cubic yards are available from Clement-Braswell, Inc. The trailers have been designed for non-stop round tripping on road construction jobs. Both hoppers can be tripped by workmen as the trailer moves through the dump site, thereby speeding operations.

The hoppers are sharply tapered toward full-width doors for a uniform dump of any kind of material. By turning the load pressure against the doors into additional locking action, a positive locking means that will not loosen under rough going has been achieved, the firm reports. The doors can only be opened by a manually-thrown lever.

The units, fabricated from high-tensile steel, are equipped with batch dividers to make split-load handling easier. A push plate in the rear permits the use of a bulldozer to assist in getting the trailer out of soft spots.

For further information write to Clement - Braswell, Inc., Louisiana Bank Bldg., Shreveport, La., or use the Request Card at page 18. Circle No. 134.

Salt tablets available in disposable dispenser

■ Plastic throw-away dispensers for its Pep-Up impregnated and enteric-type salt tablets are announced by the United States Safety Service Co. The tablets are now packaged in high-impact styrene plastic dispensers which are easily mounted on posts, walls, water kegs, vehicles, or other locations.

For further information write to the United States Safety Service Co., 1215 McGee St., Kansas City 6, Mo., or use the Request Card at page 18. Circle No. 39.

(Continued from preceding page)

for Gammino Construction Co., and Stanley Janus was asphalt plant superintendent. The Rhode Island Department of Public Works, headed by Joseph M. Vallone as director, had Peter Blinkhorn as resident engineer on the Sakonnet River bridge approach contract, Leon M. Shaw as resident engineer on the Turnpike Road relocation and reconstruction job, and Thomas C. Mullaney as resident engineer on the relocation of the West Main Road. THE END

Panel forming system has protective metal edging

■ A lightweight concrete panel forming system said to cost less than wood or metal panels on a per use basis and utilizing a galvanized metal edge to protect the plywood facing is announced by The Engineered Concrete Form Corp. The ECF panels are compatible with most wood forming systems. As worn-out wooden panels are discarded, they may be replaced with ECF panels without expensive conversion, the company states.

Galvanized metal edges and struts

and specially-designed form ties are features of the new forming system. According to the company, the galvanized metal edges almost double the life of the panel forms, eliminate a great deal of the maintenance, and facilitate a precision panel fit.

For further information write to The Engineered Concrete Form Corp., 7626 S. Wentworth Ave., Chicago 20, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 99.



HERE'S BIG-GRADER PERFORMANCE ... economy size

The Allis-Chalmers Model D is a full-fledged motor grader . . . and a "natural" for road construction and maintenance jobs where fine grading performance and low cost are both important!

It has the basic design and performance features found in machines costing up to three times as much, but there is one important difference: The Model D is compact and maneuverable enough to work in crowded areas where many other graders cannot operate.

To add still further to its usefulness, the Model D may be equipped with a rear-mounted, ½ cu-yd loader, scarifier, shoulder maintainer, leaning front wheels, power circle turn, shiftable moldboard. Optional cab offers year-round operator comfort.

Let your Allis-Chalmers dealer show you how the Model D can measure up to your standards of grader performance . . . at low cost. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

Engineering in Action

For more facts, use Reader-Reply Card opposite page 18 and circle No. 264



Five to 7-cubic-yard Mixomatic truck mixers feature an automatic transmission that provides four discharge speeds, allowing a greater flexibility of concrete flow.

Truck mixer line has four discharge speeds

Truck mixers in capacities of from 5 to 7 cubic yards featuring front engine power takeoff are available from the Willard Concrete Machinery Co. The Mixomatic units also feature Fordomatic transmissions.

An automatic transmission provides four discharge speeds, allowing a greater flexibility of concrete flow. Two levers, throttle and transmission, simplify the controls. The two-speed gear box and the take-up drive

chain are easily accessible for maintenance, the firm states.

Additional features include a faster-charging hopper, a three-way quick shut-off water valve, and splash guards from fender to frame for drum protection.

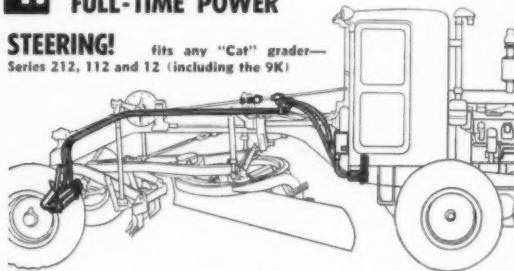
For further information write to the Willard Concrete Machinery Co., 11700 Wright Road, Lynwood, Calif., or use the Request Card at page 18. Circle No. 131.

Rivinius

**COST-CUTTERS
FOR "CAT"
MOTOR GRADER WORK**

1. FULL-TIME POWER STEERING!

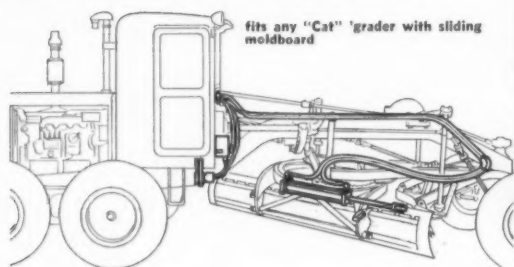
fits any "Cat" grader—Series 212, 112 and 12 (including the 9K)



Less job time . . . better job quality—that's how Rivinius full-time power steering helps your "Cat" Motor Grader put extra dollars in your pocket . . . and here's why:

- Valve located high above dust and other terrain hazards
- Holds wheels automatically in any position, over any terrain
- Eliminates wheel whip
- Free's operator's hands for handling blade and other controls
- Fully hydraulic
- Easy to install
- Minimum of working parts
- Vickers pump

2. HYDRAULIC MOLDBOARD SHIFT



- This separate Rivinius attachment can be teamed with Caterpillar or Rivinius Power steering—adding these features to your Caterpillar Motor Grader.
- Operator shifts moldboard from inside cab at the touch of a hand! Makes sure position is correct for every application. More effective work on insloping or backsloping.
- Functions whether grader is moving or stationary.
- Moldboard can be stopped—locks—at any point—operator no longer limited to five manual slot positions.
- Moldboard moves through full distance of travel in less than 20 seconds.
- Easy to install . . . minimum of working parts—operates from same pump as Power Steering.

Get complete facts about Rivinius Power Steering and Moldboard Shift from your Caterpillar dealer . . . or write:

Rivinius INC. EUREKA, ILLINOIS
For more facts, circle No. 265

Loosens

Handy Won't Leak Shoots 3 Feet

FROZEN PARTS FAST!

Same formula as famous Kroil that has pleased 14,000 industrial users for 10 years or more. Loosens stuck together metal parts, bushings, bearings, bolts, screws, pipe, etc., "anything from an embalmer's needle to a bulldozer," one customer said. "Like an extra employee," said another. "Turned rust into mush, put \$50,000 equipment back to work."

You too can get these results. Try AeroKroil at our risk. Send \$2 cash, and we'll pay postage.

KANO LABS. 1057 S. Thompson Lane, Nashville 11, Tenn.
For more facts, circle No. 266

12-OZ. CAN \$2.
F.O.B. NASHVILLE
CASE OF 12 \$18.75

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Ideal for—Offices • Drafting Rooms • Paymasters • Timekeepers • Engineers and many other uses conforming to the contractors' particular needs.

Mobile Offices come equipped with drafting tables, desks, lavatory, air conditioning (optional), heater, etc., and can be equipped to your specifications. Units are built for rugged use. Many of these units are being used by leading contractors throughout the U. S.

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For more facts, circle No. 267

Pile hammer leads

A bulletin containing information on the evolution and use of pile hammer leads describes the basic lead types with their additions and variations, and presents precise tabular data on weights and specifications of leads and accessories. It is available from the McKiernan-Terry Corp. The bulletin contains specification cards which, when filled out and mailed to the company, can obtain additional data for the contractor.

Covered in the bulletin are the following types of leads: swinging, underhung, vertical, underhung 6 to 1 and 3 to 1 fore and aft batters, extended four-way batter, and railroad pile driver leads. The adaptation of hairpins, telescopes, and extensions above the boom point to these leads are also covered.

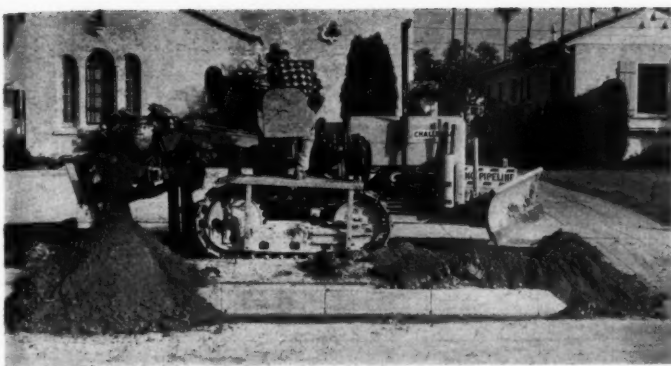
Information given on each item includes its use, the types of pile for which it is used, the jobs on which specific leads can and cannot be used, and the advantages and disadvantages, if any, of specific equipment. Illustrations of each type, and of its components, are included, as well as tabular data giving the weights of the leads and accessories applicable to each McKiernan-Terry hammer. A table of weight data for crane load estimations is also presented.

To obtain Bulletin 66 write to the McKiernan-Terry Corp., 100 Richards Ave., Dover, N. J., or use the Request Card that is bound in at page 18. Circle No. 137.

Construction guide

A four-sectioned construction guide containing full-page structural drawings that provide basic information on types, grades, and applications of fir plywood for builders, architects, engineers, and building code officials is available from the Douglas Fir Plywood Association. The booklet covers information on floor construction, single and double wall construction, and roof construction, and includes recommendations from "minimum property requirements" of the FHA.

To obtain this guide write to the Douglas Fir Plywood Association, 1119 A St., Tacoma 2, Wash., or use the Request Card at page 18. Circle No. 62.



Ladder-type trencher has depth indicator

■ A ladder-type trencher designed for universal application is available from the Challenge Mfg. Co. It digs square or round-bottom trenches from 12 to 18 inches wide and to a depth of 5 1/4 feet—in a straight line or along any desired radius. The rig has nine travel speeds and 18 trenching speeds.

The unit features a depth indicator which enables the operator to determine the exact depth of the trench without stopping the digging operation. A vari-speed hydraulically controlled reversible conveyor assures plenty of working room along the finished trench.

According to the manufacturer, the unit is a track-laying trencher with low ground bearing that will operate over soft terrain, cross open trenches, and go where other trenchers would bog down. The tracks of the rig are self cleaning. A hydraulically-controlled 68-inch backfill blade is standard equipment.

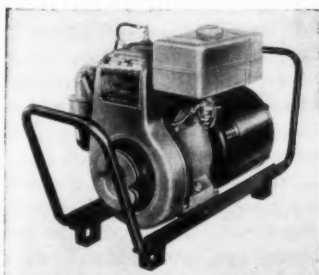
For further information write to the Challenge Mfg. Co., 1849 E. Slau-son Ave., Los Angeles, Calif., or use the Request Card at page 18. Circle No. 12.

New generator features close voltage regulation

■ Close voltage regulation and generous overload capacity are two of the features reported for a new gaso-line-engine generator available from Homelite. The 3,000-watt model 41 is recommended for use by contrac-tors, builders, and electricians.

The generator has no BC brushes, commutators, DC windings or inter-mediate couplings. It will provide portable power for electric drills, saws, pipe threaders, hammers, etc.

For further information write to Homelite, 71 Riverdale Ave., Port Chester, N. Y., or use the Request Card at page 18. Circle No. 36.



The new Homelite Model 41 generator features close voltage regulation and generous overload capacity.

A depth indicator on the new Challenge ladder-type trencher permits the operator to determine the depth of the trench without stopping the digging operation.

"Just what sort of 'explosives' did you load those holes with?"



Fights Deposits!

SINCLAIR

SUPER TENOL MOTOR OIL

For more facts, use Reader-Reply Card opposite page 18 and circle No. 268

Keep out power-robbing deposits in your heavy duty Diesels. Refill with Sinclair SUPER TENOL® for the tough jobs! It helps to eliminate deposits of carbon, varnish and sludge that impair engine efficiency. SUPER TENOL is specially engineered to fight the effects of high temperature, engine over-load and continuous stop-and-go operation. Your engines last longer!

Refill now with Sinclair SUPER TENOL. Contact your local Sinclair Represent-ative or write Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. There's no obligation.

Job-assembled plant processes lava rock for high-arch dam



Aggregate production at Oregon's Pelton Dam calls for careful selection of crushing-screening components



Ready to Blast?

...NOT UNTIL YOU'VE PAVED THE WAY FOR GOOD COMMUNITY RELATIONS!

American Cyanamid offers you expert help in gaining and maintaining the kind of good community relations that can smooth the way for your entire construction job. Such help pays off big, not only when you blast but during any follow-up construction work in a locality.

This special Cyanamid service begins with careful, detailed planning of the blasting patterns, with spacings, burdens and shot quantities accurately determined. Then comes the working out of a coordinated plan that guides your men in contacting the local citizenry—businesses, schools, hospitals, institutions,

residents—to acquaint them with your project and the precautions you are taking to insure maximum safety and quiet in the neighborhood.

Result: no unnecessarily shocked, frightened, annoyed populace, but a well-prepared community that will appreciate your taking the trouble to advise them beforehand and will extend all possible cooperation.

Count on American Cyanamid's engineers to apply the special "Good-Will" techniques that are vital to the success of your project. It's all part of our service to insure the smoothness, efficiency and accuracy of your blasting operations.

THE AMERICAN CYANAMID LINE:

High Explosives	Electric Blasting Caps
Permiscolides	Instantaneous
Blasting Powder	Regular Delay
Blasting Caps	Split-Second Delay
	Blasting Accessories



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EXPLOSIVES DEPARTMENT

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Scranton, Pa., St. Louis, Mo., Bluefield, W. Va.



For more facts, use Reader-Reply Card opposite page 18 and circle No. 269

PELTON DAM is the principal structure in a \$25 million hydroelectric project on the Deschutes River, near Madras, Oreg. This is a variable-radius-arch structure—one of the few in this country. Engineering design and supervision are by the New York consulting firm of Ebasco Services, Inc. The project is being built for the Portland General Electric Co. by Guy F. Atkinson Co., Portland and San Francisco, the prime contractor. The probable completion date is September of this year.

Aggregates are where you find them. The biggest problem is their processing, as the builders of Pelton Dam found. The geology of the site dictated the use of basalt aggregates for concrete. Tests showed they were fine for that purpose and Ebasco Services' engineers were able to get 4,000-psi concrete with only 4½ sacks of cement per cubic yard.

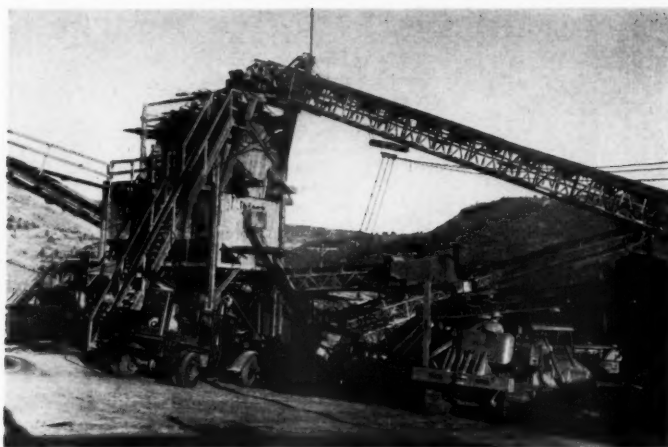
The problem lay in crushing and screening—mostly in the sand fraction sizes—for the native basalt rock had a tendency to break into elongated particles. The variable-radius design of the high arch structure called for top quality concrete and equipment was needed that could process the raw pit material to close tolerances.

Newport Construction Co., Portland, Oreg., got the aggregate production contract, which was subbed out by Guy F. Atkinson Co., prime contractors on the \$25,000,000 hydro project. Newport chose a plant site about 1½ miles from the dam. The formation here is a lava basalt outcrop with both horizontal and vertical fissures. This site was able to supply enough material for the 40,000 cubic yards of concrete in the main dam and take care of the lesser amounts needed in other parts of the structure.

Under the supervision of C. J. Wegner, specially designed equipment was moved in to handle the flint-hard basalt rock. For initial breaking, Wegner brought in a rugged overhead eccentric jaw crusher—a Pioneer 32×40 and set up special screens made

CONTRACTORS AND ENGINEERS

Crushed rock moves by belt conveyor to the 12-foot vibrating-scalping screen. All 1/4-inch-plus waste material is shunted to the waste pile, right foreground.



The plant vibrates, washes, and screens material to four sizes—6-inch to 3/4-inch-minus. The latter supplies raw feed for the manufacture of sand. The Allis-Chalmers HD-11 keeps the plant area clean.

by the El Jay Co., Eugene, Oreg. These latter units are balanced by torsion bars that transmit a true vibrating motion throughout—from the eccentric at the center of the screen to the outer ends.

But since too many fines were being picked up by all sizes of aggregate, a 4x12-foot Telsmith vibrating screen was installed at the feed end of the system to remove the 1/4-inch fraction from the raw material entering the plant. This step proved effective—the problem was solved.

The plant was designed to produce six sizes of material: 6-inch to 3-inch, 3 to 1 1/2-inch, 1 1/2 to 3/4-inch, 3/4-inch minus, and two sizes of sand.

Material routing

Since it was impossible to dig the pit-run material in its raw state, it is being drilled and shot. Equipment on this phase of the work includes a Gardner-Denver wagon drill. The unit is mounted on an Air Trac carriage and powered by a Gardner-Denver 365-cfm compressor. Tungsten-carbide rock bits are used on maximum drill steel lengths of 24 feet.

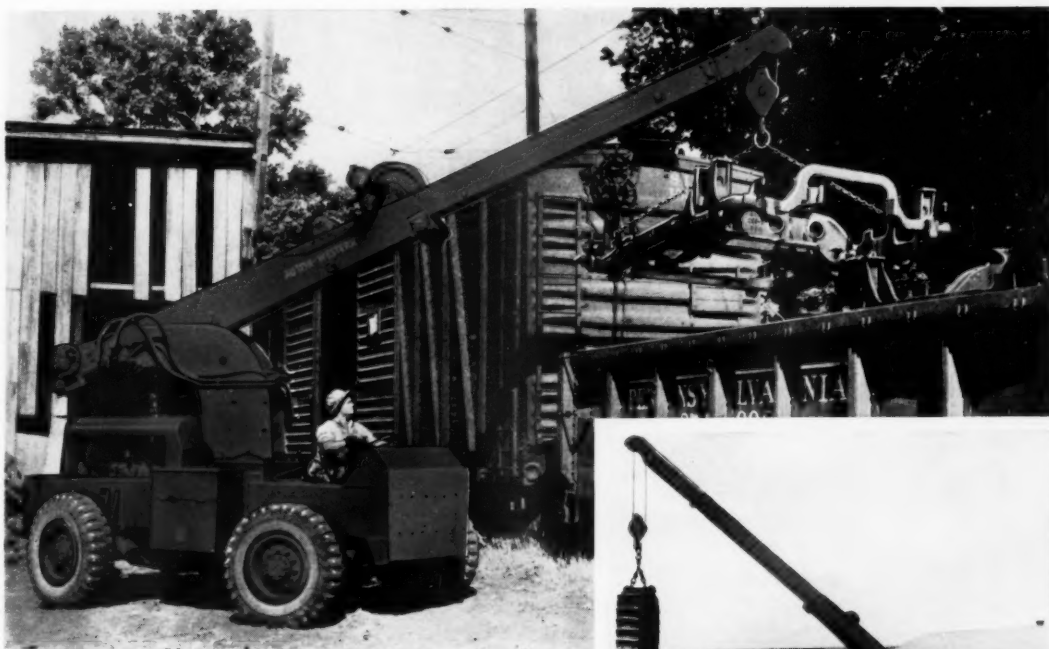
A staggered grid hole pattern is set on 8-foot centers, bottoming in at a 2 1/2-inch diameter. After light springing, these holes are loaded with Atlas Flo-dyn No. 4 bag powder to about six feet of ground surface.

Electric blasting caps are arranged in parallel and fired by a Du Pont blasting machine. Basalt rock, when well loaded with powder, breaks into small chunks that are easily handled by a 1 1/2-cubic-yard shovel. Secondary breakage is held to a minimum.

Pit-run material is hauled to the plant by a pair of Kenworth diesel-powered 12-yard rear dumps. The rock is dropped into a 48-inchx14-foot Pioneer apron-type feeder, which moves it out into the 32x40 jaw crusher. The entire crushing-screening plant is electrically powered, the current being supplied by a high-tension transmission line.

All pit-run material entering the plant passes through the 32x40 Pioneer jaw crusher. This unit handles 150-ton-per-hour input with a jaw setting of 6 inches. One of the principal aggregate sizes is 6-inch-minus cobbles, and a great deal of finished aggregate is made at the jaw crusher unit.

(Continued on next page)



A-W's live boom makes it the ideal tool for loading and unloading freight cars.

Here's the most versatile hoisting tool in industry... the A-W HYDRAULIC CRANE

Combining its unique pickup, carrying and placement capabilities with the best features of other types of cranes, the A-W Hydraulic Crane sets a new standard of performance. Take a look at some of the reasons why it does more jobs better than anything in its class:

Live boom action—The 18-ft. boom is under complete hydraulic control, responds instantly to the operator's touch with smooth, positive action. Rotates a full 360° if necessary. Can extend and lift a live 5-ton load while it pulls, moving forward or backward at the same time. Because it's powered both ways, up and down, you can't drop anything you're hoisting—an important safety feature.

Works indoors and out—Its sturdy, close-coupled chassis with all-wheel steer gives fast travel in and out of buildings and around obstacles. All-wheel drive and oversize tires take it through sand, across rough terrain, over rails with perfect ease. When the going is particularly tough, when storage areas are muddy or snowy, or there are ramps to climb or freight cars to push, all-wheel drive and the torque converter (optional) really do a job.

Easy, low-cost operation—Simplicity is the key-word for the entire operation of the A-W Crane, and anyone can easily learn to operate it in a very short time.

As for costs, this is the report of a typical user: "The daily machine cost

of \$11.11 is less than one hour's payroll of the six men this tool assists. With it, they are able to do a job in half the time. Very conservatively, our hydraulic crane is returning 100% a year on our investment."

Ask your nearby A-W distributor to tell you all about the time- and money-saving advantages of this remarkable machine. Or write direct to Austin-Western, Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Aurora, Illinois.

Write for Data Book 2253—full of facts on working ranges, boom extensions, minimum aisle widths, tractive effort, towing capacity, and special attachments.



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For more facts, use Reader-Reply Card opposite page 18 and circle No. 270



Blasters rip basalt rock from the virgin lava formation. Holes are sunk to a 24-foot depth by a Gardner-Denver wagon drill mounted on an Air Trac carriage. The staggered grid pattern spaces holes on 8-foot centers.



Flint-hard basalt rock is hauled to the aggregate plant by Kenworth 12-yard dumps. The Pioneer apron-type feeder passes raw material through the 32 x 40 jaw crusher.

LOOK TO DAYBROOK

... for a New Standard of Teamwork that Really Pays Off!



Experienced contracting and excavating operators specify Daybrook Hoists and Bodies for fleets and single units, because they get the NEW STANDARD of teamwork that really pays off!

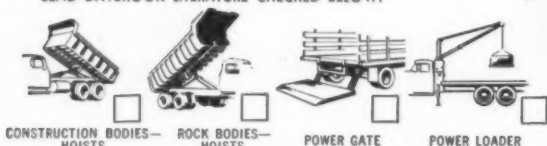
HERE'S WHY • Daybrook Dump Bodies are a symbol of *craftsmanship*! Rugged side panels and understructures—improved hardware—a tailgate that is 50% stronger—models with "safety" sloping running boards and horizontal braces—all are benefits for the user. • Daybrook Hoists feature

100% Daybrook design. Exclusive *One-Year Warranty* on the sealed hydraulic cylinder. Conventional arm, direct-lift, and telescopic models available.

TOGETHER — Daybrook Dump Bodies and Hoists function as a fully-balanced unit to handle any job—**PROFITABLY!**

Daybrook is meeting the challenge of today's rugged job requirements with a *complete* line of dump bodies and hoists for any load or capacity.

SEND DAYBROOK LITERATURE CHECKED BELOW:



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Name _____

For more facts, use coupon.

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Speedlift[®]
TRUCK EQUIPMENT

DAYBROOK HYDRAULIC DIVISION
L. A. YOUNG SPRING & WIRE CORPORATION
BOWLING GREEN, OHIO



(Continued from preceding page)

Throughs from the crusher move up a conveyor line to a Pioneer 4x12-foot vibrating scalping screen. This screen removes all 1/4-inch-minus waste material, which is shunted by conveyor out to a waste pile. The good rock retained on this screen deck then goes to a 3-foot Traylor gyratory crusher after dropping down on a Telsmith screen. The latter bypasses the 2 1/2-inch to 1/4-inch material around the gyratory crusher. This material then joins crushed rock passing the gyratory unit on a conveyor line. This conveyor takes the rock up to a 4x12 Telsmith washing screen. Here the rock is vibrated, washed by water jets, and separated into 6-inch to 3-inch, 3-inch to 1 1/2, and 3/4 to 1 1/2 inch sizes. In addition, the 3/4-inch material passes through a double washer where all the decantable fraction is taken off. The three largest sizes of aggregate are taken from a surge bin and hauled by truck to storage piles, while the 3/4-inch-minus fraction is sent by conveyor to a main surge pile. This surge pile not only furnishes 3/4-inch-minus aggregate, but also provides all raw feed for the manufacture of sand.

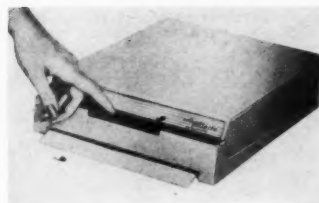
The 3/4-inch-minus surge pile is tapped by an underground tunnel and vibrating feeders that bring in material for the manufacture of sand. In entering the sand-manufacturing plant, this fraction passes up a conveyor line to a set of El Jay vibrating screens, where the 1/2-inch-minus fraction is removed. This portion drops down into a Marcy 5x12 rod mill that grinds the material to fine sizes, and then passes it out to a Wemco sand washer and classifier. The fraction from 3/4-inch to 1/2-inch is sent to a set of Pioneer 40x22 roll crusher units that grind the material down to fine particles. Throughs from the roll crusher are arranged in closed circuit with the system so that the material can recirculate until final specification sizes are made. After being manufactured, the sand passes up a swinging conveyor, where it is stacked for storage. Sand manufacture is the critical part of the operation. Under normal pouring requirements, the Atkinson Co. will place about 700 cubic yards of con-

CONTRACTORS AND ENGINEERS

Stockpiled aggregates are loaded out to Ford F8's by an Allis-Chalmers HD-11 front-end loader. The haul to the batch plant is along a 1½-mile contractor-built road.



A touch of the operating bar automatically causes the Apeco Eject-O-Matic paper dispenser to eject a single sheet of photocopy paper.



Automatic paper dispenser for photocopying machine

■ An electric, automatic paper dispenser to be used in conjunction with photocopy equipment is available from the American Photocopy Equipment Co. The Apeco Eject-O-Matic protects the photocopy paper from light exposure and automatically ejects one sheet of paper at a time.

The dispenser measures 16×10½×3 inches and has a 100-sheet capacity

of paper up to 8½×14 inches in size. It operates on 110-volt ac current. A touch of the electric operating bar ejects the sheet of photocopy paper from the bottom.

For further information write to the American Photocopy Equipment Co., 1920 W. Peterson Ave., Chicago 26, Ill., or use the Request Card at page 18. Circle No. 8.

crete a day. Newport Construction Co's. management had requirements figured right. A 150-tph input of raw material over a single shift keeps well ahead of the concrete demand. But since the demand for sand is high and there is difficulty getting the gradation to specification tolerances, the sand plant is working 24 hours a day. When a stockpile comparable to that of the other sizes is built up, project officials expect that the plant will work a lesser number of hours per day.

Basalt has a peculiar abrasive effect. Drill bits do not wear excessively, but dipper lips and teeth are badly affected. These points of wear are built up regularly with Stoodly tube borium. Also, regular maintenance is necessary to build up the surface of the Pioneer roll crushers. There has been no wear on the plates of the jaw crusher, and the screen decks have also given exceptionally good service.

An Allis-Chalmers HD-11 tractor with a Tractomotive front-end loader is used around the plant to clean up waste. This unit also loads out finished aggregates to a pair of Ford F-8's that haul to the batch plant. A ¾-yard shovel is also available for loading aggregates. The haul between the rock plant and Atkinson's Noble full-automatic batching plant follows a road built by the contractor's forces.

Operations are proceeding on a six-day-a-week basis to keep pace with a similar work schedule by Guy F. Atkinson Co.

THE END

Earthmoving computing

■ An illustrated report issued by the Bendix Computer Division of the Bendix Aviation Corp. describes in detail how a Bendix digital computer saved considerable engineering time and costs on a series of highway earthmoving computations. The total cut and fill requirements of 230 cross sections of a three-mile strip of parkway was solved in 45 minutes at a total cost of \$38.80 with the digital computer.

To obtain this report write to the Bendix Computer Division, Bendix Aviation Corp., 5630 Arbor Vitae St., Los Angeles 45, Calif., or use the Request Card at page 18. Circle No. 56.



Manufactured to comply with Federal and all state highway specifications

Wheeling Corrugated Metal Culvert Pipe withstands the torture of time and traffic — and saves highway construction dollars

It's difficult to tell exactly how long Wheeling Galvanized Corrugated Culverts will last. So often they actually outlast the road itself!

That's because Wheeling Metal Culverts can really take it! They're flexible, durable, dependable. They're stronger yet lighter. Naturally long sections are easier to handle, economical to ship and speed construction.

Wheeling Culvert Pipe or Pipe Arch, in Copper

Steel or Copper-bearing pure Iron, plain galvanized or bituminous coated (with or without paved invert) comes in a wide range of gauges and diameters.

Best of all, all are immediately available — where you want it, when you want it — right from the Wheeling warehouse or Culvert Shop nearest you. For full details contact the Wheeling warehouse, Culvert Shop, or sales office nearest you.

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19 WHEELING WAREHOUSES, CULVERT SHOPS and SALES OFFICES: Atlanta, Boston, Buffalo, Chicago, Columbus, Des Moines, Detroit, Houston, Kansas City, Louisville, Madison, Martins Ferry, Minneapolis, New Orleans, New York, Peoria, Philadelphia, Richmond, St. Louis.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 271



A small part of the total spread on a section is enough to make the right-of-way a busy place. Four Cat DW20 scrapers, two D9 push-tractors with Ateco rippers, and a Cat No. 12 motor grader build up the fill in this area.

Big spreads of equipment bring

WHAT'S YOUR PROBLEM?



for every **TOUGH** job,
there's a **TOUGHER** Dorsey

Buying a heavy-duty trailer by model number alone leaves room for error because manufacturers' standards vary widely. That's why we say, "Check the 'specs!'"

A Dorsey Model HTS-20 for example is substantially stronger than other "20-ton" low beds. You can prove this to your own satisfaction by comparing dimensions of main beams, cross members, and other structural members. The same applies to the rest of Dorsey's complete line, model for model.

"Standard equipment" should also be checked. All Dorsey models come ready for highway use under capacity loads, with full-size tires, lights, brakes, etc.

If you compare price, compare specifications, too, and you'll find you get more for your money with Dorseys.



For the complete facts on any model
heavy-duty trailer, see our
Dorsey Distributor — or wire collect:

DORSEY TRAILERS / ELBA, ALABAMA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 272



MODEL HTS LOW BED

20 Ton capacity — Weighs only 8,250 pounds
(also available in 15, 25, 30, and 35 ton capacities)

Although as much as a ton lighter than other trailers of comparable capacity, high-tensile steel main channels and close-spaced all-welded cross members give the HTS superior strength and ruggedness. Flat gooseneck provides support for blades and other loads.



THE GIANT PLATFORM

44,000 lb. capacity — Weight: 8,410 lbs.

In the year since its introduction, the Giant, with its 18-inch-deep main frame, has become America's No. 1 platform! Although as much as 2,000 lbs. lighter than other platforms, it has even greater strength.



NEW SELF-LOADING FLOAT

This trailer will actually carry 45,000 pounds concentrated in 10 feet of its length! The secret is the extra-deep high-tensile steel main frame that we "tailor" to length and load requirements.



TANDEM TILT-TO-LOAD

15,000 and 20,000 capacities,
Weights: 2,500 and 2,700 lbs.

Speed and efficiency as well as economy are combined in this versatile tilt model: it's so light a dump truck pulls it easily. Two-way hydraulic control is so precisely balanced the weight of a man will tilt it up or down. Single axle models also available.

The fact that Texas, the largest state in the country, is building one of the shortest toll roads, the Dallas-Fort Worth Turnpike, did not limit the size of the fleet of grading equipment assembled to do the earthwork. In fact, Cage Brothers, San Antonio, which had the grading contracts on two of the six sections of the road, brought in more than 70 major pieces of equipment to insure completion of their parts of the project in the shortest possible time.

Before the grading contractors had completed all of the grading, several paving contractors were starting to place the base course and concrete paving slab on the finished grades. The \$58.5-million toll road is scheduled for completion this July, substantially less than two years after the award of the first construction contract.

Built for the Texas Turnpike Authority, an agency of the State of Texas, the D-FW Turnpike will span the 30 miles between the two largest and busiest cities of North Texas. Between the two cities are a number of smaller communities and some major industries. For many years, congestion on the existing roads has developed major traffic problems at the daily rush hours.

Texans, renowned for their independence, have expressed some reluctance to accept the idea of paying toll to use a road. Individuals in distant areas have predicted that these Texans would boycott any toll road. However, those who have fought their way through the traffic tangles on the existing highways in the Dallas-Fort Worth area know that the turnpike will be in popular use. In fact, many feel that the toll cost will be less than the present stop-and-go driving cost.

Plans by consulting engineers

Consulting engineer to the Texas Turnpike Authority on the over-all planning and supervision is the firm of Howard, Needles, Tammen & Bergendoff of Kansas City, Mo. Traffic consultants were Coverdale & Colpitts of New York City. Preparation of the detailed plans and specifications and supervision of the construction were handled by local consulting engineers.

One joint venture of four consult-

CONTRACTORS AND ENGINEERS

Running 30 miles between Dallas and Fort Worth, new toll road is graded in less than one year



Important to fill construction was the job of breaking up hard chunks and watering the material. The two Rome disks pulled by Allis-Chalmers HD-20's work just behind a water truck to mix moisture into the soil.

Bringing Texas pike to grade

ing engineers known as Turnpike Engineers has the engineering contract for five of the six turnpike sections. The four principals participating in the joint venture are Forrest & Cotton, Dallas; Powell & Powell, Dallas; Freese & Nichols, Fort Worth; and Joe Rady & Associates, Fort Worth. Engineering for the sixth section is being done by Mitchell & Hunt, San Antonio, Texas.

In the typical cross section of the turnpike over the major part of its length, two 37-foot paved roadways are separated by a 40-foot depressed median. Each roadway will be marked to designate a 13-foot-wide center lane and two 12-foot-wide outer lanes. A 4-foot-wide surfaced shoulder is provided on the left or inside edge of each roadway and a 10-foot wide surfaced shoulder on the right or outside. Most of the right-of-way is 350 feet wide or wider, leaving ample room for the addition of local service roads in the future.

Fill slopes are 4 to 1 or 3 to 1, depending on the nature of the fill material. Backslopes in cut sections are a maximum of 2 to 1, but the higher cuts are benched, and each bench is provided with drainage. The maximum depth of cut and height of fill on Section 3 was about 50 feet.

Use several spreads

A typical rural grading contract was the 4.8-mile section 3 job done by Cage Brothers. This \$1,818,806.88 project included a highway interchange at the intersection with Belt Line Road and a relocation of about 8,326 feet of the Trinity River channel. Cage Brothers also did the grading for section 1.

Working as many spreads as space permitted, Cage started the 2.8-million-cubic-yard grading project in early January, 1956, and wound the work up in December—well ahead of schedule.

The initial operation was the clearing and grubbing of 113 acres of wooded land primarily along the Trinity River. Cat D8 tractor-dozers knocked down the trees, and dozed everything—even stumps—into piles that were burned on the right-of-way. A crane was used to drag the old logs, stumps, and roots from the

(Continued on next page)

ASK FOR CLINTON—THE PREFERRED POWER IN THE CONSTRUCTION INDUSTRY



Meet rigid job completion dates because...

CLINTON ENGINES

STAY ON THE JOB... UNDER ALL OPERATING CONDITIONS

Here is "packaged" horsepower that doesn't know what it is to loaf. There is a complete line of air-cooled Clinton Engines from 1¾ horsepower to 10.3 horsepower for application to power anything "runable." They are downright rugged. All-weather protection makes starting easy. Hi output ignition systems make them start and run in any weather—all-temp air-cooling design meets all operating temperature conditions. They are interchangeable with any engine in their class. And you are never stuck for service. Over 10,000 authorized Clinton Service Centers from coast to coast give immediate service on parts, repairs or replacement engines.

See the yellow pages of your telephone directory for the names of Clinton Service Centers near you.



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World's largest manufacturers of the most complete line of air-cooled gasoline engines. Over 5,500,000 now in use on the farm, in the home and in industry.

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Please send me specification sheets on Clinton Gasoline Engines applicable as the source of power for construction equipment.

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 273



This Caterpillar D9 does double duty. Here it pushes a Cat DW20 scraper during grading work on the Dallas-Fort Worth Turnpike. Whenever ripping operations are in order, it goes to work with the Ateco ripper it carries.

(Continued from preceding page)

river channel in areas where the old channel was to be filled and become a part of the roadway.

Trinity river relocation

Near the intersection of Belt Line

Road, the Trinity River snaked its way back and forth across the turnpike alignment six times within a distance of about a mile. Rather than construct the many bridges necessary to maintain this alignment of the

river, the engineers decided to construct about 8,326 linear feet of new channel to lead the river away from the highway and out around the area to be occupied by the Belt Line Road Interchange.

The new channel has a 100-foot bottom with 2 to 1 sides averaging

about 25 feet high. In the center is a pilot channel, 3 feet deep and 36 feet wide, to direct low flows away from the banks. At the upper levels, the channel change cuts were made by Caterpillar DW20 scraper spreads pushed by Cat D9 tractors, and all suitable material was incorporated into roadway fills.

When wet mucky material was encountered near the bottom of the cuts, three draglines using Hendrix buckets excavated the material, loading it into Euclid bottom-dumps that hauled to waste areas.

About half of the old channel had to be filled to carry the roadways while other portions must remain open in order to accommodate local drainage.

An earth plug was built across the old channel to divert the water temporarily through three 72-inch culverts. The area to be filled was isolated by blocking the downstream end, and three Gorman-Rupp 6-inch pumps were installed to dewater the section. The wet mucky material from the channel was pushed ahead, baled out by the draglines, and hauled to waste areas by Euclid bottom-dumps.

Starting at the upper end, a spread of Cat DW20 scrapers began hauling in stable fill material, which was dozed ahead by Caterpillar D8 tractor-dozers. As soon as this material had been built up to a grade that would support the equipment, the usual method of building the fill in shallow layers was used for the remainder of the fill.

In the usual method of building the fills, the scrapers laid down the material in 8-inch loose lifts. Each lift was disked with Rome disks pulled by Caterpillar D8 and Allis-Chalmers HD-20 tractors both before and after the material was watered. When the optimum amount of water had been incorporated into a lift, the material was compacted by Tampo and Ferguson 50-ton rubber-tire compactors. This operation began at one side of the fill and was carried across the width of the fill in successive scraper widths.

Cuts require ripping

Some of the material in the cuts was very hard and had to be ripped so that scrapers could load efficiently. Two of the three Caterpillar D9 push tractors on the section were equipped with rear-mounted, hydraulically operated Ateco rippers fitted with three teeth. These rigs ripped whenever time permitted. Two Cat D8 tractors with Caterpillar 28 rippers were busy most of the time.

Some of the material was a very dry clay that resisted the incorporation of water. As this material was

VERSATILE

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Another load is dumped on the fill by the DW20, left, while a Gebhard sheepfoot roller continues the job of compacting the material. The roller works just behind one of the Rome disks that break up the hard clay.



spread on the fill by scrapers, it was disked by big Rome disks pulled by Allis-Chalmers HD-20 and Caterpillar D8 tractors. Water was then applied by water trucks, and the material was disked again. In some cases, motor graders joined in the mixing operation in an attempt to incorporate the optimum amount of moisture in this soil.

This was a slow, time-consuming operation that necessitated the number of scrapers supplying the fill to be cut from eight to three. Cage soon discovered that time could be saved by applying some of the water in the cuts where the ripping and loading provided some manipulation and mixing action. Water trucks moistened the exposed surface of the cut. The rippers then went through to loosen the soil, and scrapers followed to load. The usual watering and disking operations on the fill then incorporated a sufficient amount of water without excessive delay.

Seven water tankers were used in this operation. Four of these were Chevrolet trucks with 1,750-gallon tanks, two were Fords with 2,000-gallon tanks, and the other was a Mack with a 4,000-gallon semi-trailer tank.

Five of the big 50-ton rubber-tire compactors were used on the fills. Three of these were Tamco compactors which were pulled by Caterpillar D8 or Allis-Chalmers HD-20 tractors. The other two were Ferguson compactors fitted with special yokes and pulled by Caterpillar DW21 two-wheel rubber-tire tractors.

Cross old gravel pit

Another tough grading problem was involved in the construction of about 1,800 feet of roadway through an area of abandoned gravel workings. This area consisted of the old spoil banks of waste material with deep muck-bottom ponds between. The operation here was in some ways similar to that in the old river channel.

The contractor did not attempt to dewater the area, but started the fill from solid ground on one side and pushed it ahead by dozing the material into place. This pushed the muck ahead, and it was bailed out by draglines using Hendrix 1 $\frac{3}{4}$ and $\frac{3}{4}$ -yard buckets. The muck was loaded into two Dodge tandem-axle trucks with 10-yard dump bodies and hauled away from the job.

A spread of Caterpillar DW20 scrapers brought the material from the cut as far out as the fill would support them. Cat D7 and D8 dozers pushed the material ahead into the water. This type of operation was carried on until the fill had been

built up to an elevation of 4 feet above the water level completely across the old gravel pits. Then the usual shallow-lift method was used to bring the fill to grade.

As the loaded scrapers and other heavy equipment worked over this fill, failures developed wherever the

muck had not been completely crowded out. These areas were then excavated and backfilled with good material to correct the failures.

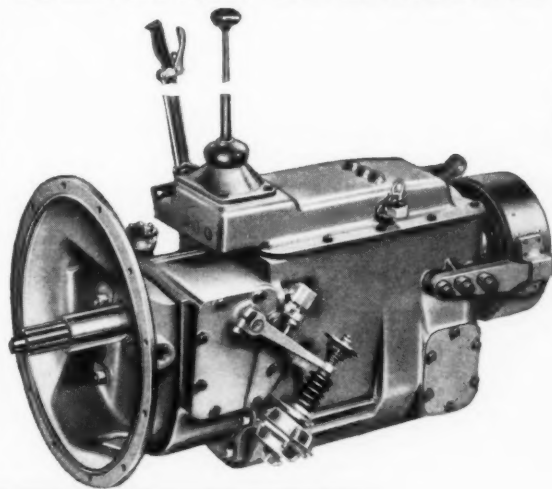
Hauls are long

Although the job was less than 5 miles from one end to the other,

much of the material had to be hauled long distances. This is evidenced by the volume of overhaul, which totaled almost 7 million cubic-yard-quarter-miles over a 600-foot free-haul distance. The average haul distance was close to 4,000 feet, and one unit of 50,000 cubic yards was



Ideal for Highway Hauling- CLARK STEP^MATIC Transmission



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EQUIPMENT**

Here's happy and profitable news for all operators whose truck equipment takes punishment—Clark's STEP^MATIC Transmission. This transmission has proved particularly ideal for long-haul, high-speed operations.

- Ten speeds—splitting ratios in between the normal 5-speed transmission ratios—giving 28% steps to fit every hauling need.

Transmission gears synchronized. Semi-automatic shift for the splitting ratios

- Full control of gear-shifting at all times.
- Spares engine—the right ratio for every grade prevents engine lugging—decreases hauling time and fuel consumption.
- Increases transmission life—reduces shock loads. Less downtime for repairs.

By all means write for full information on this highway-proved achievement of Clark engineering.

TRANSMISSION DIVISION

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 275



A crane uses a Hendrix bucket to load waste into Euclid bottom-dumps during construction of the 8,326 linear feet of new channel for the Trinity River. The new channel eliminates the need for building bridges across the river, which crosses the road alignment six times in about a mile's length.

A Ferguson 50-ton roller, which is used to compact the fill after disking and watering, handles an extra job: Using a cable, it anchors a Caterpillar No. 12 grader that dresses down a side slope.



(Continued from preceding page)

designated to be hauled 4 miles. However, the contractor chose to waste the excess of excavation and borrow for the fill from a pit off the right-of-way instead of making this extremely long haul.

With these long hauls, this job was obviously one for rubber-tire equipment. Cage Brothers' fleet included 12 Caterpillar DW20 scrapers operated in three spreads, four Caterpillar DW15 scrapers, and two Euclid 24TDT scrapers. Push-loading of the scrapers was handled by three Caterpillar D9 tractors and an International TD-24. Other crawler tractors on the job were six Cat D8's, 2 D7's, and two Allis-Chalmers HD-20's. The crawlers were either equipped with dozers or were used to pull the Rome disks, Tampo 50-ton rollers, or Gebhard sheepsfoot rollers.

Maintenance of the haul roads was a vital item in keeping the large fleet of scrapers operating at high travel speeds. Nine Caterpillar No. 12 motor graders were kept busy continuously—building and maintaining haul roads, shaping the roadways, and manipulating the fill and subbase materials.

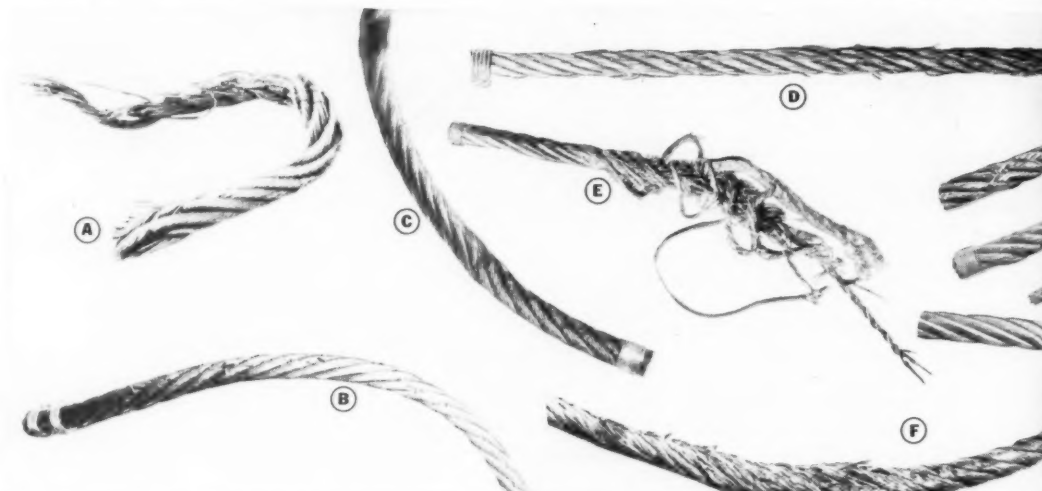
Select subbase

A foot of compacted select subbase material was laid down on the roadway sections. Obtained from cuts or from borrow pits along the right-of-way, this material was a sand-clay mixture selected for a low PI. The subbase was loaded and hauled by the DW20 scrapers and was laid down in 8-inch loose lifts that compacted to about 6 inches. The watering, disking, and rolling operations on the subbase were the same as those used on the fill, although the fill was required to be compacted to 95 per cent of standard Proctor density while the subbase material had to be compacted to 100 per cent density.

A 6-inch compacted base course was included in the paving contracts on this project.

In addition to the earthwork, Cage Brothers' contract included many incidental items. They stripped the topsoil from all cuts and fills and replaced 4 inches of topsoil on all cut and fill slopes. The grading contractor also sodded the cut slopes, but the sodding of fill slopes was included in the paving contracts. The complete

Tuffy Wire Rope Tips



Tuffy gives you a quick run-down here on some of the mortal enemies of wire rope—the abuses that quickly ruin rope efficiency or end its life abruptly long before you have had the service you paid for.

Even the best wire rope is a sitting duck for the enemies which won against the wire rope pictured on these pages. When you avoid or eliminate them you make important gains in longer rope life, better service and greater economy. Remember, your Tuffy distributor will be glad to work with you against these and other wire rope hazards.

It's the "end of the line" for wire rope when these things happen:

- A. Mangled in a wedge socket.** Here's the result of improper socketing. This fatal rope injury was caused by a poorly designed or worn out wedge socket. Failure at the dead end can damage other sections of the rope.
- B. Rusty road to ruin.** Rust—No. 1 enemy of steel—takes a heavy toll in wire rope life. It's an insidious, silent type of killer, often doing irreparable damage before it's even noticed. The one-strand break shown above resulted when the rope was allowed to become rust-bound through lack of lubrication. With other conditions ideal, tests show properly lubricated rope has up to 10 times the life expectancy of dry rope.
- C. The crushing blow.** The Sunday punch for this piece of wire rope was delivered by a tractor cleat—just one of many crushing injuries that result when wire rope is run over or banged into by a hard, sharp object. Even the best rope is no match for this kind of mistreatment.
- D. Strangled by misfit sheaves.** When the bearing surface of the rope is damaged by misfit sheaves, the rope is ruined.

Tuffy Special Wire Ropes are tailored to special use. Ordering is easy.



Tuffy Scraper Rope

Moves more yardage per foot because Tuffy Scraper Rope is specially built to take the beating of extreme drum-crushing abuse. Flexible; withstands sharp bending; hugs sheave grooves and winds snugly and smoothly on drums. High resistance to load shock on slack line.



Tuffy Dragline Rope

A longer-wearing line for all dragline operations. Special abrasion resisting construction which also gives extra flexibility. Tuffy Draglines also spool better, ride better on grooves and hold tightly to drums when casting. Consistently dependable in handling any material—wet or dry dirt, sand, gravel, rock, cement or minerals.



right-of-way was fenced by the grading contractors. On this section, fencing included 68,025 linear feet of woven-wire farm fencing and 3,758 feet of link-type fence.

There were two major utility relocations. A 42-inch sanitary sewer, 2,465 feet long, was relocated and the 36-inch water main connecting Dallas and Grand Prairie had to be reconstructed through the area where the Trinity River channel was reconstructed. The contract also included 11,633 feet of concrete and corrugated metal culverts ranging in diameter from 15 to 72 inches, and 18,350 feet of 6 and 8-inch concrete pipe underdrains.

While the major bridges were awarded as separate contracts, the grading included the construction of

three large box culverts containing a total of 1,272 cubic yards of concrete. One of these provides access across the turnpike for a landowner whose property was split into two sections by the new road.

Personnel

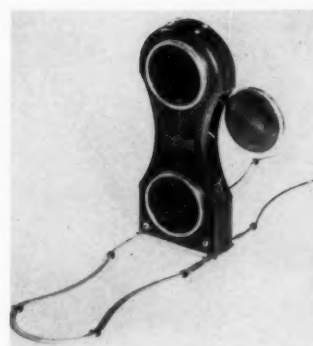
Cage Brothers employed as many as 200 workmen at the peak of the job, and these men worked 10-hour days, six days a week. These men were divided into ten or more spreads, each supervised by its own foreman or superintendent. The project superintendent in charge of the Section 3 operations was R. W. Atkins. The grading superintendent was William N. Owens. Running the several crews were Charles Atkins, Ed Jackson, William N. Stevens, D. R. Rob-

inson, R. W. Chappell, J. W. Johnson, Homer Park, B. D. Shaw, and Harry Miller.

Representing Turnpike Engineers on Section 3 is resident engineer Jeryl Hart, The chief engineer for the group is W. F. Frey. The turnpike engineer for the Texas Turnpike Authority is J. H. Davis. THE END

Highway distress signal has swinging reflector

■ A highway distress signal incorporating a swinging reflector in addition to two stationary reflectors is available from Da-Nite Safety Industries. The Road-Wag signal is recommended for construction and utility crews and for carrying by truck operators for use in emergencies.



The Road-Wag is a highway distress signal with two stationary reflectors and one swinging reflector.

The device gives an effective signal both day and night, the company reports. The warning exceeds ICC requirements and meets the requirements even if the swinging signal becomes inoperative.

The swinging reflector is operated by a magnetic motor with one moveable part powered by a 1½-volt flashlight battery said to last up to 96 hours. The unit is constructed of rigid steel with a folding metal base. It measures 12×5×2 inches.

For further information write to Da-Nite Safety Industries, 248 South G St., San Bernardino, Calif., or use the Request Card at page 18. Circle No. 6.

Spring road maintenance

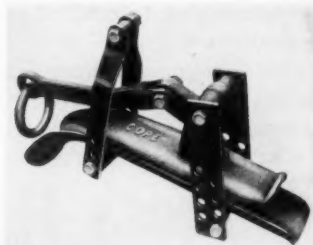
■ Literature about maintaining unpaved roads during the spring and summer months is available from the Calcium Chloride Institute. The literature includes data on adding materials, shaping, crowning a road, applying calcium chloride, and maintenance tips. A chart lists recommended amounts of calcium chloride for various road widths, and total tons per mile.

To obtain this literature write to the Calcium Chloride Institute, 909 Ring Bldg., Washington 6, D. C., or use the Request Card at page 18. Circle No. 64.

Cable puller salvages underground cables

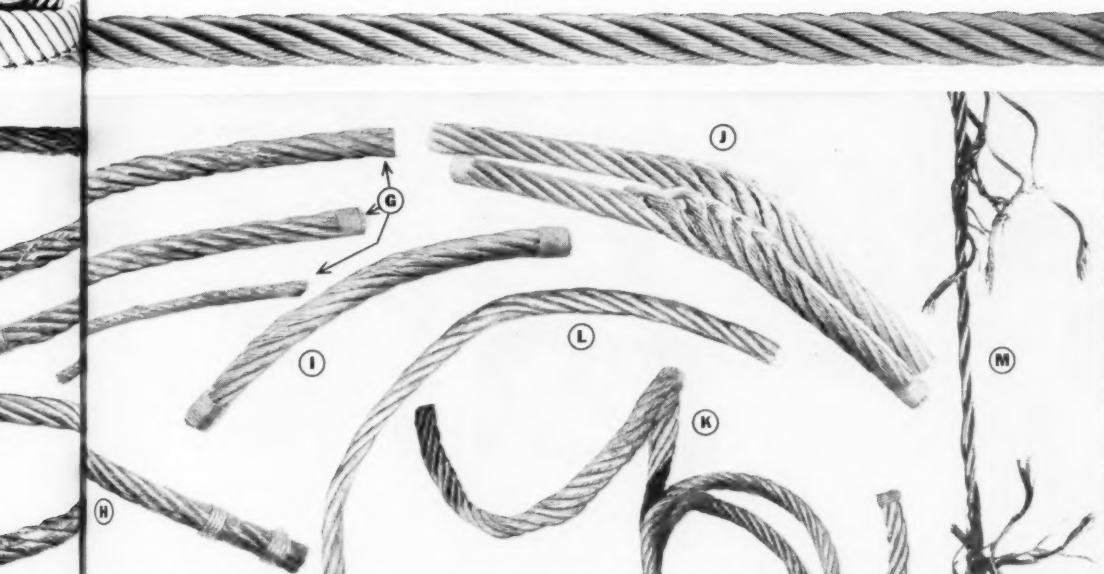
■ A new cable pulling tool for salvaging underground cables is available from T. J. Cope, Inc. The heavy-duty puller will handle 2½ and 3-inch cables. It applies a strong grip that can be released by slackening the winch. In this fashion, the cable is easily withdrawn from the conduit, the company states.

For further information write to T. J. Cope, Inc., Third and Walnut Sts., Collegeville, Pa., or use the Request Card at page 18. Circle No. 76.



The T. J. Cope cable pulling tool handles 2½ and 3-inch cables.

How wire rope is crippled and killed without a fighting chance



is too small for the rope diameter, pinching action destroys the rope especially when it is overloaded. The rope shown above was knocked out in just 1½ hours of service. Apparent suicide! This rope jumped out of sheave and was destroyed by pulling around the shaft. Actually it was a case of sudden slack which threw the rope out of the sheave. This rope came to an untimely end by operating over a sheave that did not turn. Note the exceptionally heavy abrasion on one side of the rope.

Victim of "the bends." Excessive bending soon wears out rope. Generally, more flexible ropes are used as bending increases (with decrease in tread diameter of sheave or drum). If a rope is operated on a sheave too small for its bend characteristics, early failure is certain. Through an exhaustive series of bending tests, Union engineers have compiled a list of factors that you can use to be sure you get the rope construction that will give you the longest service life. Ask about it.

On the "blink" from a kink. This open kink resulted from handling of wire rope. Guard against kinks by proper winding on the drum. Never pull a loop smaller; always straighten it, then straighten out the rope.

Crushed and worn from "beatings on the drum." Drum wear gives wire rope severe punishment even under normal operating conditions. This wear is found at the cross-over points and at the flange. Excessive drum crushing results from operating on too large or too small a drum. Here are typical "drum beatings":

I. Cross-over wear

K. Drum-crushing on oversized drum

J. Cross-over crushing on drum

L. Drum-crushing on undersized drum

Although drum wear cannot be eliminated, its effects can be greatly reduced. Under properly engineered procedures, two and three times the service can be obtained from the same line. Union Wire Rope engineers will help you with this problem. Get in touch with us for more information.

M. Overloaded — soon exploded. Wire rope is "prescribed" for a given use on the basis of breaking strength plus a safety factor of 4. The grade of steel, type of construction and size of the rope determine tensile strength. It must be properly related to the loads it will carry, or expensive and dangerous early failures are likely to occur.

ing is easiest say **Tuffy** give length and size, and forget complicated specifications.

Tuffy Slings and Hoist Lines

Tuffy's team that cuts hoisting and time costs in all types of materials handling.

Tuffy Slings are made of a patented, 9-machine-braided fabric that stays flexible, and isn't materially damaged by knotting or kinking.

Tuffy Hoist Line is a special construction with the extra flexibility and toughness for longer service life on overhead cranes, derricks and clamshells.

Tuffy Dozer Rope

After ordinary ropes are worn out, Tuffy Dozer Rope has the stamina it takes to keep on handling the blade. 150' mounted on your dozers let you cut down sections without wasting good rope. This unbeatable combination piles up sizeable savings on dozer rope costs.



Your Tuffy distributor will help check your equipment

Condition of equipment is a big factor in longer rope life and greater economy. Your Tuffy distributor will help you check equipment and operating conditions to make sure everything is in your favor for getting the greatest service out of your Union wire rope. Ask him to lend a hand in a thorough inspection. He'll be glad to do it. And if there are still knotty problems, Union Wire Rope Corporation engineering department will help further.

union Wire Rope corp.
2260 Manchester Avenue, Kansas City 26, Mo.

Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand

For more facts, use Reader-Reply Card opposite page 18 and circle No. 276



The drum of the new Jaeger truck mixer can be started, stopped, or reversed from within the cab of the truck while traveling.

PTO-powered drum reverses as transit mixer travels

■ A truck mixer with a front-of-engine power takeoff in which the drum can be started, stopped, or reversed while the truck is traveling is announced by The Jaeger Machine Co. The operation of the drum is controlled from within the truck cab.

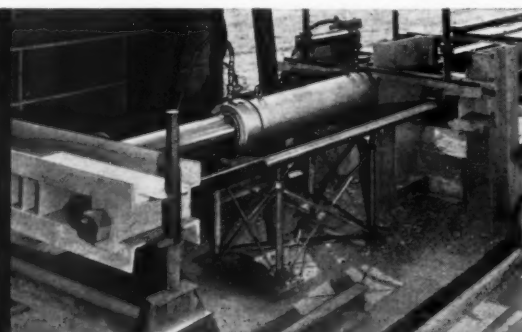
This special feature is made possible by Jaeger's three-speed hydraulic reversing transmission, which provides an automatic power-actuated cycle of operation. An optional automotive transmission is available.

Either type of transmission provides three-speed drum operation of from 1½ to 16 rpm within the efficient engine speed range, the company reports. Separate-engine drive or power takeoff from the transmission shaft is also optionally available.

For further information write to The Jaeger Machine Co., 550 W. Spring St., Columbus 16, Ohio, or use the Request Card at page 18. Circle No. 46.



NORTH CAROLINA—North Carolina Products Corp., Raleigh, N. C.



CALIFORNIA—Rockwin Prestress Concrete Co., Norwalk, Calif.



PENNSYLVANIA—Schuylkill Products, Inc., Cressona, Pa.



NEW YORK—Frontier Dolomite Concrete Products, Lockport, N. Y.

Rodgers HYDRAULIC JACKING UNITS

Best On Prestressing Jobs, Everywhere!

RODGERS Hydraulic Jacking Units used singly or in multiples of two, four or more provide "controlled pretensioning and detensioning" of steel strands.

Regardless of size or type of bed design—whether the jacking carriage is of rods with locking nuts or guided structural steel abutments with locking screws—Rodgers Jacks assure smooth, positive action. Accurate control of pump and jacks provides uniform pretensioning and detensioning to conform with exacting state and municipal specifications.

Prestressing units with any number of jacks are available with hand operated or power driven hydraulic pumps in capacities from 50 to 600 tons. Double-acting jacks are offered with ram travels of 30 or 48 inches. Single-acting jacks with ram travels of 6, 7½ or 13 inches.

Rodgers Hydraulic Inc.

7415 Walker Street • Minneapolis 26, Minnesota

For more facts, use Reader-Reply Card opposite page 18 and circle No. 277



For complete information
on Prestressing Jacks and Pumps
write for Rodgers Catalog 332



EXPORT DIVISION

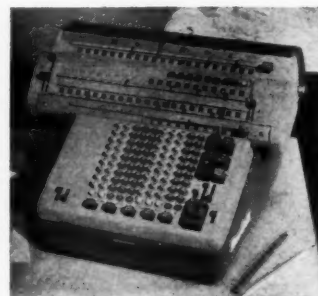
205 WEST WACKER DRIVE

CHICAGO 6, ILLINOIS, U. S. A.

Calculating machine has two new features

■ An advanced version of its Model 66-N duplex calculator is announced by Monroe Calculating Machine Co., Inc. The Model 88-N features selective automatic division and three-factor multiplication.

Selective automatic division makes it possible to divide from the accumulating dials as well as from the lower result dials—a time-saver and work-



The Monroe Model 88-N calculating machine makes it possible to divide from the accumulating dials as well as from the lower result dials.

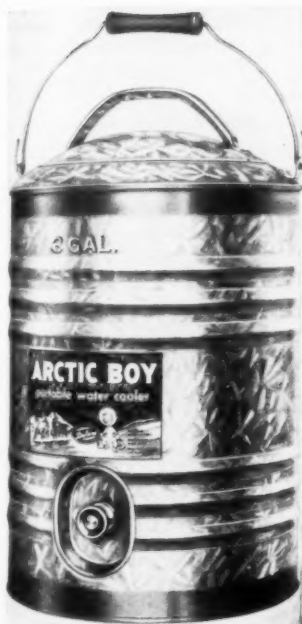
saver, the company reports, particularly when figuring averages, unit costs, and all types of formulas. Automatic dividend alignment operates for both dials.

Three-factor multiplication permits the entering of the result of an addition, subtraction, or multiplication as an automatic multiplier without setting keys. Used with the accumulating dials, the feature is said to greatly reduce the time required for this frequently-used operation. Accumulative and negative multiplication are fully automatic on the 88-N.

For further information write to Monroe Calculating Machine Co., Inc., 555 Mitchell St., Orange, N. J., or use the Request Card that is bound in at page 18 of this issue. Circle No. 94.

Metalweld names salesman

Walter Joachim has been appointed to the sales staff of Metalweld, Inc., Philadelphia, Pa. Joachim will service contractor accounts in the Philadelphia area. John E. Lynch will represent the firm in Chester County, Pa., and in the entire state of Delaware.



This 3-gallon Arctic Boy water can is one of a line of portable coolers featuring an inner coating that is said to keep liquids clean, odor-free, and taste-free.

Portable water coolers have odor-free liners

■ Water cans and coolers featuring a non-toxic inner coating that is said to keep water and other beverages clean, odor-free, and taste-free are available from the Schlueter Mfg. Co. The Arctic Boy portable water coolers are offered in 2, 3, 5, 10, and 15-gallon sizes, with or without faucets.

The standard models feature a thermo-type double wall construction that utilizes the dead air space for insulation. All heavy-duty coolers are equipped with closed covers, universal metal lugs for paper cup dispensers, and Dow Styrofoam insulation. A bottom band is welded on for additional body and bottom protection.

For further information write to the Schlueter Mfg. Co., 4616 N. Broadway, St. Louis 7, Mo., or use the Request Card at page 18. Circle No. 107.

Crawler excavator-crane

■ A brochure on its crawler-mounted Model 254 cranes and excavators is available from The Hanson Clutch & Machinery Co. Engineering details and features of the model, which can be used for crane, clamshell, drag-line, shovel, trench-hoe magnet, or pile driver applications are described and explained in the company's new literature.

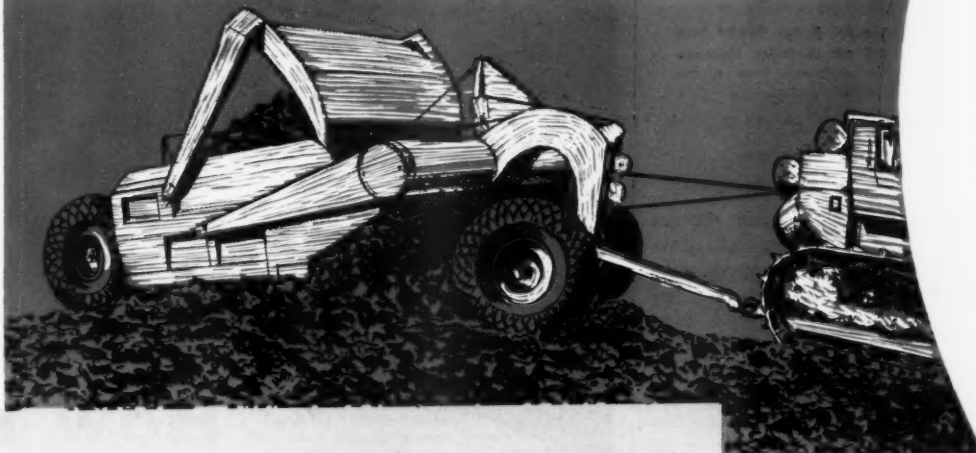
Such Hanson features as the crowd and hoist clutches and the swing clutch assembly are illustrated and detailed. The brochure shows an exploded view of the friction control mechanism of the independently-powered boom hoist. The crawler mechanism, the lower bed assembly, and the upper turret bed are shown in cutaway pictures.

To obtain this literature write to The Hanson Clutch & Machinery Co., 2000 Miami St., Tiffin, Ohio, or use the Request Card at page 18. Circle No. 66.

USING RENTED HYDRAULIC PORTABLE POWER CUTTERS, the job of removing a quantity of 1/2-inch reinforcing rod to prepare an old foundation for new construction was completed in less than 24 hours. The Azzarelli Construction Co., Kankakee, Ill., did the job using Guillotine cutters rented from the Manco Mfg. Co. It is estimated that it would have required 120 man hours to do the job with conventional bolt cutters. The Manco Guillotine cutter is available in two models. One cuts up to a 1/2-inch mild steel rod in about 1/4 second per cut and the other cuts up to 1-inch mild steel rod in about 1 1/4 seconds per cut. For further information write to the Manco Mfg. Co., Bradley, Ill., or use the Request Card at page 18. Circle No. 79.



... on scrapers ... dozers ... In all severe scraper wagon service ...



WIRECO Super-Flex Scraper Cable gives SAFE, STEADY SERVICE!

Scraper service deals severe punishment to wire rope. Nobody knows this better than the construction people who are faced with the continual need for a scraper rope that withstands sharp bends, rubbing on sheave housings and fouling on drums that cost yardage and profit!

Because of its construction, WIRECO Super Flex is Flexible!... to take the sharp bends and abuse in stride! It's pliable for easy handling... will wind smoothly on drums. Because of this freer movement through sheaves and drums it affords faster handling in loading and unloading... means more yardage moved in less time with less effort... and, naturally, a better job profit!

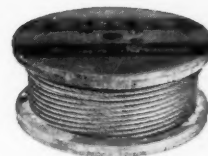
Abrasion resistant!... to perform under all kinds of adverse conditions! The stamina and staying power of Wireco and Brown Strand are bred into the Super-Flex! It thrives on rough going... gives you longer, more satisfactory service life!

In TODAY'S CONSTRUCTION BUSINESS the wire rope you use may be the difference between capital success and capital failure. With so much riding on the rope that equips your scraper or dozer, it makes sense to buy the best scraper rope in the business. Wireco has the best... **ENGINEERED** to the demands of YOUR job!

ASK YOUR WIRECO DISTRIBUTOR!

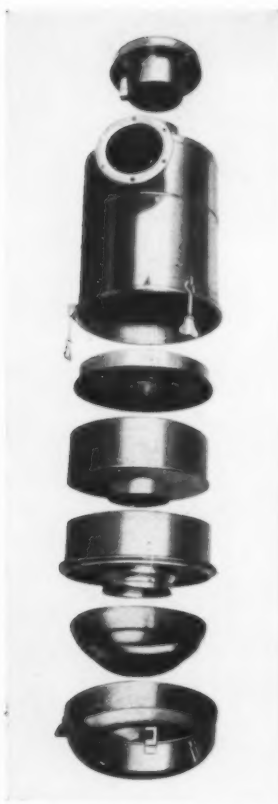
WIRE ROPE CORPORATION OF AMERICA, Saint Joseph, Missouri

For more facts, use Reader-Reply Card opposite page 18 and circle No. 278



WIRECO SCRAPER CABLE comes conveniently wound on scraper reels ready for fast easy mounting!





The Remov-All Series "999" line of oil-bath air cleaners features removable elements and a removable after cleaner.

Oil-bath air cleaner has removable element

A new line of oil-bath cleaners with removable elements and removable after-cleaner is available from the United Specialties Co. The Remov-All Series "999" is said to be better than 99.9 per cent efficient in dirt removing and dirt holding.

The oil-bath sections are combined in a single unit with a fibrous after-cleaner which needs no replacing. All cleaner elements are easily and quickly removed, cleaned, and reinserted. It is not necessary to break the connections between the cleaner housing and the engine when servicing.

The after-cleaner, or top element, is said to remain efficient in temperatures as low as minus 65 degrees and as high as plus 145 degrees F. It will not fracture under air load shock. Sealing is positive in all directions and against all flanges.

Both the middle and bottom sections, of different structure to assure correct installation, have filter elements composed of wire springs. The springs are positive meshing and non-collapsing to provide a positive oil-wash action without channeling. Bracketed studs on the center tube and large wing nuts, located on brackets in the element center, allow easy hand assembly.

For further information write to the United Specialties Co., 9765 S. Cottage Grove Ave., Chicago 28, Ill., or use the Request Card at page 18. Circle No. 51.

To help finance the expanded highway building program in Utah, the state legislature is increasing the state motor fuel tax from 5 to 6 cents a gallon.

New 16-inch power plane features 2 1/4-inch-wide cut

A new 16-inch power plane, the Model 150P, is announced by the Porter-Cable Machine Co. The new plane delivers smooth-as-glass edges on work ranging from soft pine to glue-bonded birch panels, according to the company. The 150P features a 2 1/4-inch-wide cut.

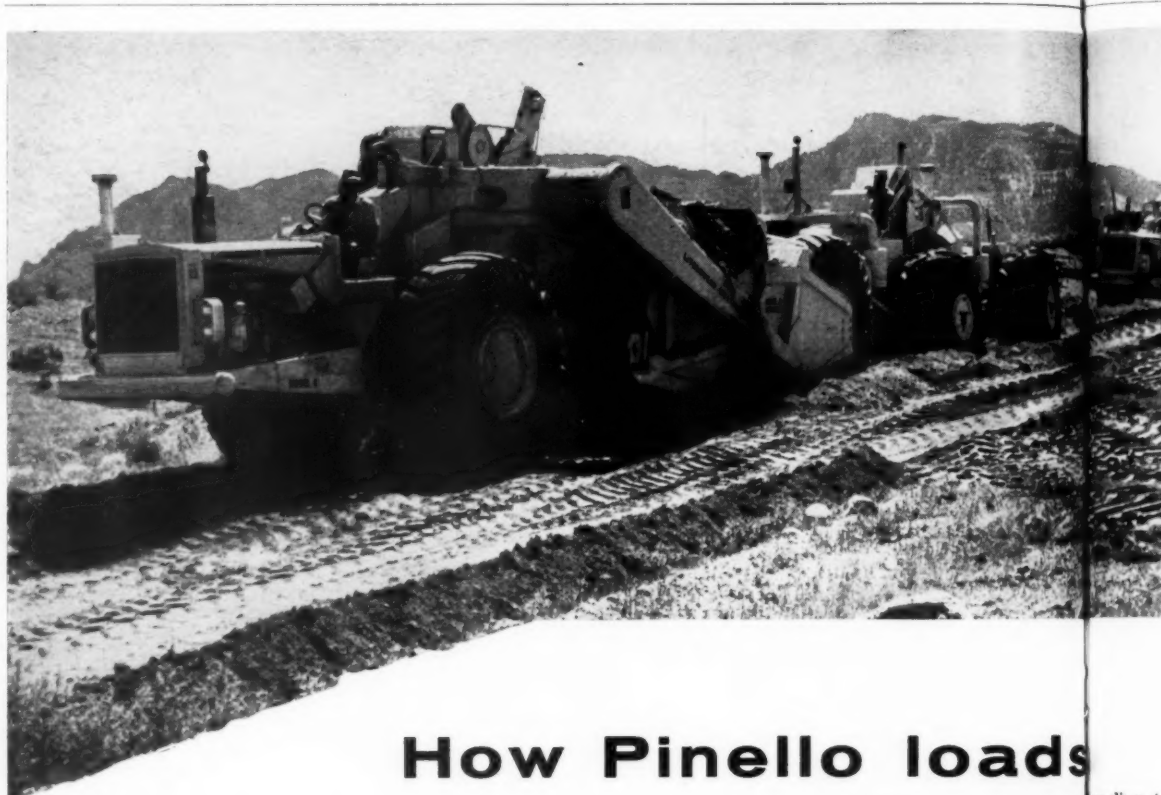
The power plane is available with a 1/2, 3/8, or 1 1/4-hp motor. Its operating speed eliminates chipping, even on laminates, the company states. Design features include a 16-inch



shoe, a narrow throat, and a patented chip disposal system. A trigger-type switch makes possible finger-tip control.

A 2 1/4-inch spiral cutter removes up to 3/32-inch of wood at each stroke. The depth control permits adjustment even while planing. The 150P cuts any angle from minus 15 degrees to plus 45 degrees. Over-all measurements are 16x6x7 3/4 inches, with a net weight of 4 1/2 pounds. The frame is polished aluminum with stainless steel shoe plates.

For further information write to the Porter-Cable Machine Co., 108 Exchange St., Syracuse 8, N. Y., or use the Request Card that is bound in at page 18 of this issue. Circle No. 149.



How Pinello loads 25-yd. scrapers in 40 sec

The construction industry's most powerful rubber-tired pusher, the 416 hp LeTourneau-Westinghouse Twin-C*, set records for speed, mobility, and power recently when it worked with 2 big 25-yd. Model B Tournapulls® on an 840,000-yard grading job for Nick Pinello of Colorado Springs. The job involved leveling the site of a new shopping center in a suburb south of

the city. On this contract, scrapers moved tight shale and clay, with some gravel—checked at 15% in-place moisture, on the average.

Pinello had L-W scrapers in two other work teams on the project. Four 18-yd. self-propelled C Tournapulls were push-loaded by a crawler as were three crawler-drawn 23-yd. scrapers. (Chart shows performance of all teams.)

With powerful 416 hp dual-engine drive. At the Twin-C behind the big 25-yard "B" Tournapull was heaped with material in less than 40 sec.

Twin-C's air-actuated, constant-mesh transmissions, with torque converter drive 40-ton pusher at speeds up to 10 mph. Work records show it could easily handle up to 4 big scrapers working 1/2-mi. round-trip hauls.

Production for all teams averaged over 14,000 yds. in an 8-hour day. When "B" and "C" teams worked shorter than average hauls (1,200'), they moved 18,000 yds. Pinello finished 3 days ahead of schedule, without working his machines to capacity.

Tires compacted spread material. The operation was a balanced cut and fill job. Maximum cut was 45', maximum fill, 30'. Soil was fairly tight. With big tires on scrapers aiding compaction, and sheep's foot roller doing final compacting, Pinello had no trouble getting 90% Proctor density.

Production on steady level. Pinello ran this 840,000-yd. grading job with the precision of an 8-hour clock. Production was good and steady above average at all times.

TOTALS OF TEAM PERFORMANCE

Here are team figures for one 9-hr. day's production of all scrapers and pushers on Pinello's spread:

Team 1: 2 B Tournapulls (25-yd.) with Twin-C Pusher.

Cycle time	3 min.
Trips per hr.	16
Average load	20 yds.
Hourly output per "B"	320 yds.
One-Way haul	1,200'
Load	40 sec.
Haul	60 sec.
Dump	20 sec.
Return	60 sec.
Cycle time	3 min.
Team daily total	5,000 yds.
Output per scraper:	2,500 yds. 1,200' haul

Team 2: 4 C Tournapulls (18-yd.) with two 190 hp crawler-tractor pushers.

Cycle time	3 min.
Trips per hr.	16
Average load	12 yds.
Hourly output per "C"	192 yds.
Approximately same haul and cycle time as Team 1	
Team daily total	6,000 yds.
Output per scraper:	1,500 yds. 1,200' haul

Team 3: 3 Scrapers (23-yd.) drawn by 190 hp crawler-tractors with a 190 hp crawler-tractor pusher.

One-Way haul	750'
Team daily total	3,000 yds.
Output per scraper:	1,000 yds. 750' haul

Only one man is required to operate the Bit Paver, which can resurface up to 15,000 square yards per hour.

Bituminous resurfacer is operated by one man

■ A bituminous resurfacer on which the application of seal coat and chips is controlled by the machine's operator, eliminating the spreader box man and the tail platform man for the spray bar, is available from Tanco, Inc., representative of the



manufacturer, Wright Industries. If the stone and bituminous materials are supplied in sufficient quantities, the company states, the Bit Paver can resurface up to 15,000 square yards per hour.

The Bit Paver reportedly has suf-

ficient rim pull to push the largest semi-truck. Empty, and without the spreader box, the resurfacer is said to be within all legal limits for travel on any state highway. A 200-gallon fuel tank supplies both of the resurfacer's engines and carries a reserve

for road rollers or other equipment on the job.

The bituminous tank, insulated with 1½-inch Fiberglas and fired by butane gas with temperature control to 500 degrees, has a capacity of 2,000 gallons. A 175-gallon fuel oil compartment is for flushing and cleaning the spray bar.

The 4-inch Viking asphalt pump is powered by a 44-hp engine and has a positive displacement of one gallon. The chip roller is powered through PTO from the resurfacer's transmission. Spreader boxes 9 to 15 feet are available. The spray bar has full circulation with nozzles on 4-inch centers.

For further information write to Tanco, Inc., P. O. Box 5283, Akron, Ohio, or use the Request Card at page 18. Circle No. 122.

When Twin-C push-loads this big B Tournapull, a total of 709 hp is concentrated in forward thrust. Machines shown here were among 10 L-W units used by Nick Pinello in moving

840,000 yds. for a new shopping center near Colorado Springs, Colo. Twin-C and 2 "B's" worked as a team. Loading time in tight shale-clay-gravel was only 40 secs.



Hauling to fill, B Tournapull takes advantage of high speed. Rig completed ½-mi. cycle in 3 min. Bank at right is part of fill. At this stage, material moved by Pinello's scrapers was used to dress edge of fill.

An Adams heavy-duty grader was used by Pinello for haul-road maintenance and leveling of fill area. High-speed grader was able to keep up with production of three "B's", four "C's", and three L-W tractor-drawn scrapers.



machines sidelined for costly repair work. He educates his operators to go after the steady profitable production.

Men, machines well managed

Besides good men and good machines, a third factor deserves credit for Pinello's success in business. Third profit producer on all his jobs is Pinello's own good management of men and ma-

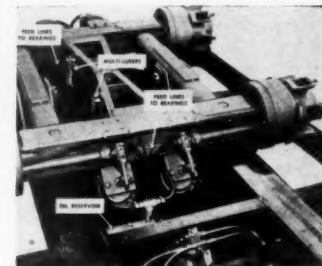
chines. He schedules a precision timetable to get maximum team output and insists that all units roll on schedule all day long, every working day.

Investigate the new 27-yd. "B" Fullpak® Scraper and the 18-yd. "C" Tournapulls for your production dirt-moving. And, for that faster loading, check the 416 hp Twin-C Pusher. Call or write for detailed information.

*Trademark F-1298-H

Integral lube system available on low-beds

■ Low-bed trailers from the LaCrosse Trailer Co. are now available with the Lincoln Multi-Luber system as optional equipment, the company reports. The system that lubricates as the vehicle operates is available on



Here is a typical installation of the Lincoln Multi-Luber on a LaCrosse tandem-axle low-bed trailer. The system lubricates the axle each time the brakes are applied.

LaCrosse low-beds with capacities of from 8 to 75 tons.

The Multi-Luber system is controlled through brake application of the trailer's running gear. An interconnection through the air supply from the relay valve makes this automatic action possible. A lubricant reservoir of four gallons is supplied. This is sufficient lubrication for 90,000 miles, the company reports.

The installation of the system reportedly lowers trailer maintenance costs, increases the operating efficiency of the equipment, increases the service life of bearings and moving parts, and prevents waste and contamination of the lubricant.

For further information write to the LaCrosse Trailer Corp., 418 Gould St., LaCrosse, Wis., or use the Request Card at page 18. Circle No. 96.

Shovel Supply news

A. E. Kramer has joined the Shovel Supply Co., Dallas, Texas, as district representative in the Central-Midwest states. From headquarters at Springfield, Ill., Kramer will cover North and South Dakota, Nebraska, Kansas, Minnesota, Iowa, Illinois, Missouri, Wisconsin, Michigan, Ohio, Indiana, and Kentucky.

According to Pinello: "That's all I want—good steady production. I keep scrapers rolling at 14 miles per hour, even though they could double out on the straightaway. Excessive shovelling costs a contractor money. Repair costs go up, and so does downtime. At the end of the job, the profit column reads zero."

"Machines are money-makers"

Pinello is proud of his men and his machines. "Today's machines are money-makers," he says. "I like the all-electric controls are fast, and the machine is easier to maneuver with electric controls. Maintenance is low, and repair is a snap."

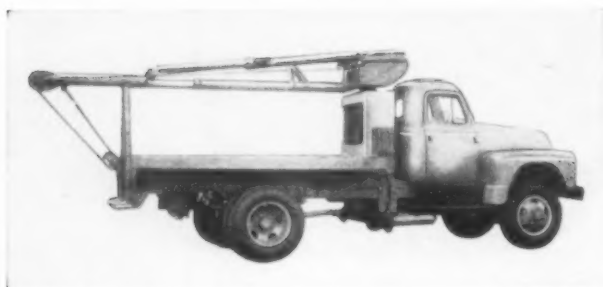
Pinello gives each of his operators a strong sense of responsibility for controlling operating cost of rigs, by having them handle their own servicing and repair work at end of shift. According to Pinello, "Any operator in my job can tear 'em down and fix 'em." This unusual feature of Pinello's operation pays off.

Pinello doesn't believe that racing his rigs pays off. He doesn't want operators to "give-it-the-gun", trying to lap another operator. He doesn't want his

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS
A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Reader-Reply Card opposite page 18 and circle No. 279



The Truck-Crane has a capacity of 5,000 pounds and is hydraulically-operated through a PTO-driven pump.

Truck crane spaced 18 inches behind cab

■ A truck-mounted crane attachment that requires only 18 inches of space behind the truck cab is available from Truck Crane, Inc., a subsidiary of the Anthony Co. Power for the Truck-Crane is completely hydraulic in all phases of operation through a power takeoff-driven pump.

The boom swings through a 280-degree arc. It projects or retracts hydraulically in the horizontal position or at any point up to an 85-degree elevation. Both horizontal and elevating-type booms are offered. Maximum capacity is 5,000 pounds.

Control levers are located on both sides of the truck for operation from ground level. One lever provides forward, reverse, locking, and speed control for each power movement. The valve bank, which locks automatically when the levers are released, has a relief valve for the prevention of overloading.

For further information write to the Anthony Co., 1750 Baker St., Streator, Ill., or use the Request Card at page 18. Circle No. 110.

Automatic arc welders

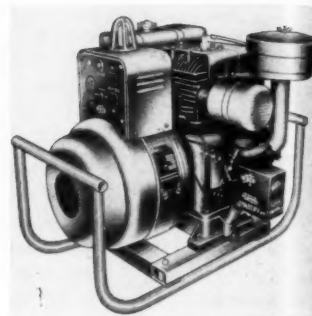
■ A brochure on Rexarc welders and positioners, and their components, is available from The Sight Feed Generator Co. Especially designed for earthmoving contractors, the illustrated brochure shows the versatility of the Rexarc equipment in handling varied welding requirements by the submerged-arc method.

Among the new equipment featured in the literature is a roller and idler welder and positioner capable of handling eight tractor rollers at a time, and a rail welder attachment for varied circular and conical weldments. Full descriptive illustrations of the components are shown.

Complete charts indicate at a glance the estimated time and material required to build up and hard face a full set of tractor rollers and rails, plus pertinent data concerning welding equipment. Also presented in the booklet is information on automatic welding wire, hard-facing and manganese electrodes, acetylene generators and compressing plants, Li-quifluxers and Liquiflux, and replacement parts.

To obtain Rexarc Form 3157 write to The Sight Feed Generator Co., West Alexandria, Ohio, or use the Request Card that is bound in at page 18. Circle No. 57.

The Winco 205B14S2D 2,500-watt generator is now available with the automatic Conserv-Er electrically motivated idling control.



Control idles generator until power is required

■ An electrically-motivated idling control that allows a generating plant to idle until a load of 75 watts or more is applied is available from the Wincharger Corp. The Winco automatic Conserv-Er idling control is reported to save fuel, extend engine life, and reduce maintenance.

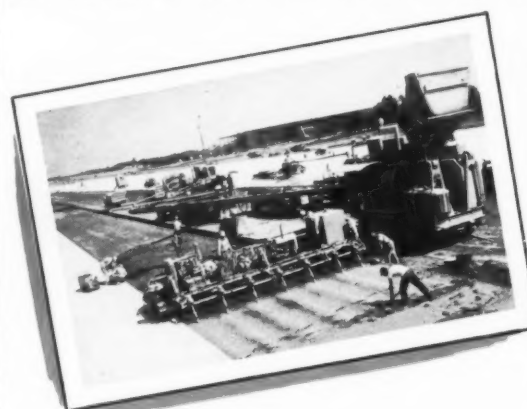
The automatic idling control is available as an accessory on the 2,500-watt Winco 205B14S2d and the

303B23S2d generating plants. Both these units are powered by direct-connected Briggs & Stratton engines.

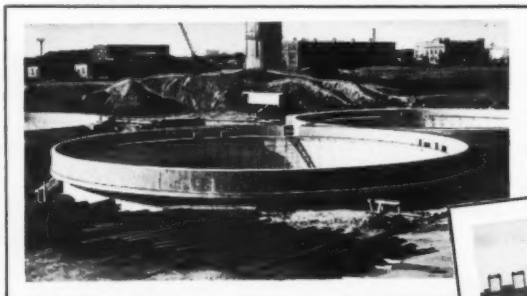
For further information write to the Wincharger Corp., P. O. Box 1168, Sioux City, Iowa, or use the Request Card at page 18. Circle No. 121.



Air Bubbles Give "Concrete Answer" In Airmen's Quest for Stronger Strips

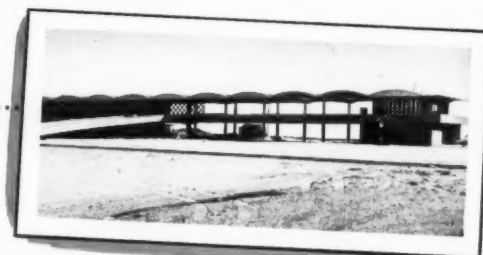


ENTRAINMENT EFFECTIVENESS PROVED IN SEVEN-YEAR TEST



Huge circular settling tanks, buried beneath the surface at the East Shore Disposal Plant, New Haven, Conn., have successfully "weathered" seven years of freezing and thawing, show no evidence of disintegration through chemical attack. Constructed of poured concrete by C. W. Blakesley & Sons Co. of New Haven, the underground tanks were pronounced "in perfect condition" on recent examination.

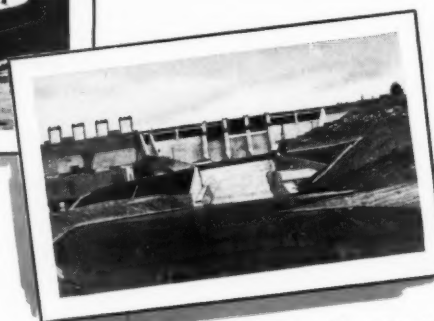
Billions of air bubbles, entrained in the thick concrete slabs of Portsmouth (N.H.) Air Force Base giant aprons and runways, proved the answer to stresses of frost and other winter weather factors in this major project, constructed by Morrison-Knudson Co. DAREX AEA, selected as the air-entraining agent, helps keep a smooth, unbroken surface for today's multi-ton planes. Job was completed in 1956, under supervision of Corps of Engineers, U.S. Army.



Coastal Storms, Salt Spray No Hazard to Beach Pavilion

Project of Metropolitan District Commission, this ultra-modern bathing pavilion at Salisbury, Mass. used DAREX AEA to insure against deterioration from salt spray, rough weather. Architects: Coletti

Bros., Boston; engineers: Ebasco Services of N. Y. DAREX AEA is credited with keeping costs of poured concrete structure at minimum by maintaining yields, providing easy placement.



To create this rock-solid structure—with a weather eye for the strict economy demanded by public utility projects—engineers on the New England Electric Co. power dam at Littleton, N. H. turned to DAREX AEA. Proved in such enormous operations as the Noxon Rapids Dam, Noxon, Washington, DAREX AEA reduces flaking and cracking, resists internal and external pressures.

DAREX AEA HELPS HOLD COST CEILING IN N.E. POWER PROJECT



DEWEY AND ALMY CHEMICAL COMPANY

DIVISION OF W. R. GRACE & CO.

Cambridge 40, Mass. San Leandro, Calif. Montreal 32, Canada

For more facts, use Reader-Reply Card opposite page 18 and circle No. 280



CONTRACTORS AND ENGINEERS



Southern California cement hauler Max Binswanger has his fleet equipped with the A. O. Smith integral-axle fifth wheels. Increased payloads, lower maintenance, and greater safety are some of the reported advantages of the new fifth wheel.

New fifth wheel design eliminates leaf springs

■ A new type of trailer fifth wheel for the front suspension on the rear trailer of a truck train is announced by the A. O. Smith Corp. The Smith integral-axle fifth wheel eliminates the need for leaf springs on trailer fifth wheel assemblies. It consists of two assemblies—the stabilizer assembly fastened to the trailer frame and the axle assembly.

The axle assembly is housed within the front axle. Inside the axle assembly, five pairs of synthetic rubber cushion rings—bonded to steel divider plates—carry the vertical load and absorb the shock. In addition, Neoprene O-rings, arranged in a special design, absorb rebound shock.

This assembly, floating in an oil bath, is cased with a protective cover, enveloped by a permanently bonded synthetic rubber cushion jacket. This is said to absorb all lateral and longitudinal shocks of the road, controlling the trailer and eliminating road wobble. A center pin linking the two assemblies enables the axis to turn.

For further information write to the A. O. Smith Corp., Pacific Coast Works, 5715 Smithway, Los Angeles, Calif., or use the Request Card at page 18. Circle No. 84.

New saw tooth core bit increases footage speeds

■ A core bit that works like a saw but operates on a conventional rig to bring up smooth core samples is available from the Hoffman Bros. Drilling Co. The tungsten-carbide-insert saw tooth core bit is said to greatly increase penetration speeds in such materials as coarse-grained sandstone, shale, slate, and limestone. It is particularly recommended for non-metallic applications.

For further information write to the Hoffman Bros. Drilling Co., Punxsutawney, Pa., or use the Request Card at page 18. Circle No. 41.



The Hoffman tungsten-carbide-insert core bit works like a saw but operates on conventional rigs to bring up smooth core samples.

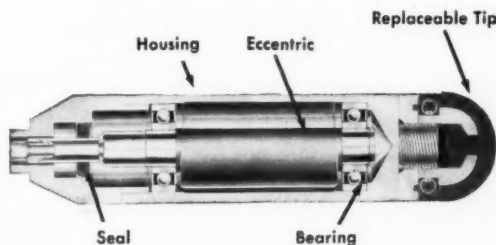
Four blade attachments offered for sod cutters

■ Four new blade attachments for tilling, aerating, edging, and bent-sod cutting on highway shoulders and median strips are now available for all sod cutters manufactured by the Ryan Landscaping Equipment Co. The blades are available in 12, 15, 16, 18, and 24-inch sizes for all Ryan models.

A Super-Kut blade is designed for clean cutting through the finest bents or the toughest grasses without tearing or clogging. A new tilling blade breaks up to 2 to 3 inches of compacted topsoil for sodding or seeding. It can also be used to destroy weeds.

An aerating blade loosens and aerates compacted subsoil up to 3½ inches deep without damage to the surface. Paths up to 6 inches wide are loosened leaving only a narrow slit in the sod for the penetration of water and fertilizer. The new edging blade is reported to eliminate up to 90 per cent of hand labor in cutting sharp edges up to 4 inches wide and 3 inches deep.

For further information write to the Ryan Landscaping Equipment Co., 871 Edgerton St., St. Paul 1, Minn., or use the Request Card at page 18. Circle No. 106.



SIMPLE DESIGN—Short head Viber vibrators are simple in design and have few parts as indicated in cut-away picture above. Head assembly with replaceable rubber tip is shown at left. Assembly with 3-finned steel-cast tip at right.

Short Head Viber Vibrators Offer Major Advantages in Placement of Concrete

VIBER VIBRATOR heads are short, easy to manipulate—simple, easy to maintain. Simple construction of the Viber head makes a compact assembly which maneuvers easily around steel and into awkward, hard-to-reach places.

The Viber design utilizes a single eccentric weight in a heat-treated alloy steel housing. Other parts are one bearing at each end of the weight and a grease seal. Viber patented replaceable rubber tip is standard

equipment, with 3-finned steel cast tip optional.

Viber heads are light weight, ranging from 6 to 16 pounds... 11 to 12 inches in length and are available in four diameters—1¾ in., 2½ in., 2½ in. and 3 in.

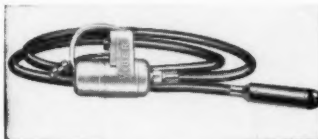
Flexible shaft driven, Viber vibrators are powered by electricity, gasoline or air... easily adapted to varying job conditions. They are high speed, operating at speeds between 8500 and 11,000 rpm.

Viber Replaceable Rubber Tips

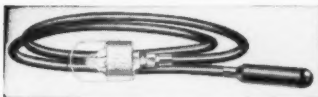
Viber rubber tips save contractors thousands of dollars yearly by preventing damage to forms of plywood and other expensive materials. In addition, since most wear on a vibrator occurs on the end of the housing, use of replaceable rubber tips greatly extends housing life.

Viber vibrators are effective. More work can be done in less time and with minimum danger of damage to forms by using the high speed low amplitude type of vibrator pioneered by VIBER.

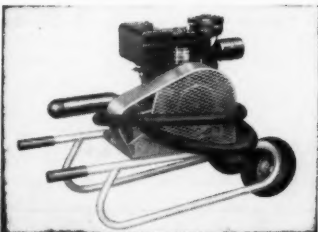
For complete information on Viber vibrators and address of nearest distributor, write Viber Company, 726 South Flower St., Burbank, Calif. Dept. 17E1.



Model E Electric



Model P Pneumatic



Model G Gasoline



VIBRATORS SINCE 1931

For more facts, use Reader-Reply Card opposite page 18 and circle No. 281



DAREX Products Offer Dual Safety On Massachusetts Turnpike



"Masterpiece of engineering—miracle of construction!"

Helping perform these construction miracles on the East-West Toll Road across Massachusetts are two products of Dewey and Almy research—DAREX AEA to add years of life to bridge columns and other vital concrete sections—DARACONE to protect bridge abutments from water and preserve their strength against deterioration from the action of de-icing salts.

The looping interchange at Weston, Mass. (above) clearly demonstrates the importance of bridges on this 123-mile project. There are 181 in all, between the coast and the Berkshires—every one of them made stronger, longer-lasting by this time-tested team!

Both products were selected by the engineers on the job; both are valued equally by the construction men behind this "Better Roads" project.

Wherever the job, DAREX AEA and DARACONE provide dual safety—assurance of success in construction, assurance of durability in use!

Other Dewey and Almy Products for the Concrete Industry

DARALITE—Air-entraining agent for use with lightweight aggregates

DARASEAL—Premium quality concrete curing compound

DARAWELD—For bonding new concrete to old



DEWEY AND ALMY
CHEMICAL COMPANY
DIVISION OF W. R. GRACE & CO.

For more facts, circle No. 280

Reinforced hot-mix pavement extended to strengthen cutoff walls

The first 2-inch course of asphaltic-concrete laid, a workman walks along the welded wire fabric jutting up from the cutoff wall to bend it into place.



The Cleveland 80W ...a real money maker



LAYS PIPE



FILLS TRENCH
from
either side



TAMPS, TOO

Does All 3 Jobs Better...with Only 1 Man

THE CLEVELAND TRENCHER CO.

20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO



For more facts, use Reader-Reply Card opposite page 18 and circle No. 282

The newest construction on the 2,000-foot-long causeway linking the southern terminus of State Route 5 in Maryland and Point Lookout, where the Potomac River joins Chesapeake Bay, consists of an asphaltic-concrete roadway reinforced with welded wire fabric. But what makes the causeway construction unique is the use of the reinforcing to strengthen the sea walls against erosion.

The actual reconstruction of the roadway was done by Bituminous Construction Co., Baltimore, Md., while work on the cutoff wall, the pile-driving job, and installation of the wire reinforcing was done by M. C. Thompson, III, Hollywood, Md. The combined work is expected to resist the erosion that has long plagued the road.

Since 1933, heavy storms have washed out the road five times. The greatest damage occurred in 1954, when Hurricane Hazel swept up the eastern seaboard and whipped Chesapeake Bay into waves that roared through to Lake Conoy, on the west side of the causeway. When the storm was over, an 8-foot-deep and 30-foot-wide channel had been cut through the causeway.

What makes the cutoff wall unusual is that it ties the fabric and the edge of the roadway slope to the shore. After 6-foot lengths of 3x10 treated sheeting had been driven into the sand to form a continuous edge for the completed slope surface, lengths of 2½-foot-wide rolls of welded wire fabric were unrolled along the sheeting and the edges stapled to the sheeting. This provided nearly two feet of reinforcement that extended vertically above the top of the sheeting.

Cutoff wall unusual

Next, 6x8 treated battens or walers were bolted 1½ inches below the top of the inside face of the sheeting. Each sheet was spiked to the inside

Each sheet was spiked to the inside



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... Mr. Paving Contractor — If you are adding to, or replacing, your paving equipment, the Overman Spreader is the one for you. Its low cost, operating speed and economy, and ability to handle ANY job assures you of increased efficiency and more profit on every paving contract.

Yes, this IS the paver for you.

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FOR
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TODAY

I. J. Overman Mfg. Co.
BOX 896 MARION, IND.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 283

CONTRACTORS AND ENGINEERS

The strikeoff of a Blaw-Knox shoulder spreader is adjusted by a workman as the 3-inch bituminous concrete surface course is placed over the wire reinforcing along the shoulder.

Welded wire fabric is tied to sea walls, bent into place to become integral part of reinforced causeway pavement

batten for additional protection against displacement. Then 4x6 walers were placed outside the sheeting, and the walers and sheeting were drawn tight by 5/8-inch bolts at every fourth sheet. All bolts and metal fittings were galvanized.

Additional strength for the cutoff wall on the Chesapeake Bay side of the causeway was provided by having the sheeting and walers backed up with treated 12-inch timber piles. These were spaced on 20-foot centers and driven into the sand to a 10-ton capacity. These pilings were tied to the cutoff wall by 30-inch-long 3/4-inch bolts.

Tied into roadway

The steel fabric was tied into the roadway during the paving operations. After the first 2-inch course had been placed on the 4 to 1 slope by Blaw-Knox Model 85 shoulder spreader, the reinforcing extending above the sheeting was bent over so

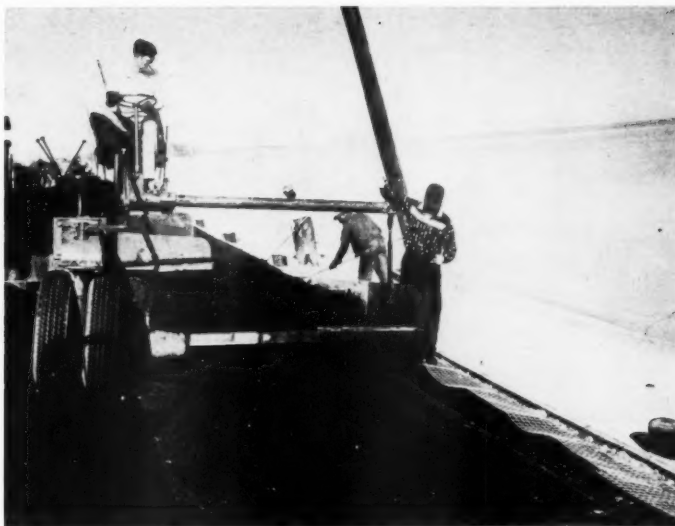
that it lay between the base course and the final 2-inch surface course.

Bill Kelly, superintendent for Bituminous Construction Co., gets the credit for having an ordinary lawn roller "iron out" the fabric as the spreader moved along the shoulder, spreading the bituminous concrete level with the top of the sheeting. A small Buffalo-Springfield roller worked just behind the spreader. The roller was towed along by a Caterpillar Motor grader that rode the level stretch of roadway, preventing the compactor from digging into the surface.

Roadway paving

Like the slopes, the roadway was primed with 1/10 to 1/4 gallon of MC-1 per square yard before paving started. The pavement, consisting of 3 inches of hot-mix, was put down by a Barber-Greene finisher and compacted by a Buffalo-Springfield roller.

(Concluded on next page)



excavating granite overburden



2 1/4 yard MICHIGAN gets fast maneuverability with

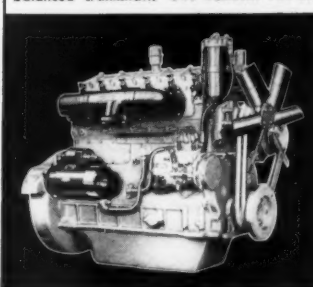
WAUKESHA

Diesel

● Looks too tough for a rubber-tired tractor shovel. But, Waukesha-powered with a 135-DKB Diesel, this 2 1/4 yard Michigan 175-A is excavating granite overburden in development work at the Crystal fluorspar mine, near Darby, Montana, at 6900 ft. elevation. 500 tons per 7-hr. day! Good going, but it takes power and lots of it—the smooth, speedy, flexible power of a Waukesha Diesel. This same 175-A Michigan loads fluorspar ore, too, “hopping” from one 12-ft. bench to another... to blend the grade of ore which varies at different bench levels. 400 blended tons per 7-hr. day takes speed and mobility.

339

135-DKB Diesel—4 1/4-in. bore x 5-in. stroke; 426 cu. in. displacement, with counter-balanced crankshaft. Get Bulletin 1573.



WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK

TULSA

LOS ANGELES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 285

It's more than just an arc welder!

Operate tools, lights, motors, etc.

Use your own men. Do your own repair and construction work right on the job and keep valuable equipment working. Save hundreds of dollars on replacement parts and avoid costly delays. Always ready—welds anywhere. Provides emergency 110 AC power when and where you need it.

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Hobart Brothers Co., Box 857, Troy, Ohio Please send me current information, without obligation, on the following checked items:

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Name _____ Position _____

Firm _____

Address _____

Write for information on Hobart Welding School

CHECK for free Weldor's Vest Pocket Guide

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 284



The Buffalo-Springfield roller compacting the slope is kept from digging into the top course as it is towed along by a Caterpillar motor grader that rides the roadway.

(Continued from preceding page)

The mix, with 100 per cent of the aggregates passing the 1-inch screen and with asphaltic cement averaging 5.97 per cent, was hauled from 16 miles to the Point Lookout promontory from the contractor's plant at Lexington Park.

The entire project was designed by Albert L. Grubb, chief of the Maryland Bureau of Bridges, and his assistant, Larry Carr. M. C. Thompson, Jr., resident maintenance engineer in St. Mary's County, represented the Maryland State Roads Commission, which has Robert O. Bonnell as chairman and Norman M. Pritchett as chief engineer.

THE END

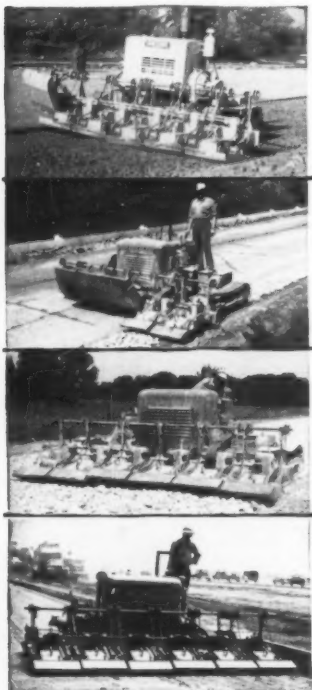
Drive Safely!



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VIBRO-TAMPER guarantees* required density ...

mechanical PERFORMANCE!



- (1) SHOULDER COMPACTION USING 5 SHOES.
- (2) WIDENING—2-SHOE COMPACTION.
- (3) 10" BASE COURSE TO 8"—1 PASS.
- (4) RUNWAY—COMPACTION BETWEEN FORMS.

Here's single-lift compaction efficiency that assures you an average of 1000 sq. yards per hour on courses from 4" to 15" thick ... and you get 95% or better modified proctor.

Vibro-Tamper is built ruggedly to run around the clock with down-time limited to scheduled service periods ... and it's so simple to run that no assigned operator is needed.

Materials—Seven years in the field on jobs from Maine to Missouri indicates that you can expect amazing compaction efficiency on almost any material except mud and clay.

REQUEST BULLETIN VT 6-4

*See your Vibro-Tamper dealer for express warranties.



THE INTERNATIONAL VIBRATION CO.

16701 WATERLOO ROAD

IVanohoe 6-0680

CLEVELAND 10, OHIO

For more facts, use Reader-Reply Card opposite page 18 and circle No. 286



To resist corrosion, the pump body, impeller, and strainer of the new Schramm self-contained portable pneumatic sump pump are made of bronze.

Portable sump pump is corrosion resistant

■ A self-contained portable pneumatic sump pump for the removal of sewage, sludge, and water from excavations, quarries, ditches, and trenches is available from Schramm, Inc. The pump body, impeller, and strainer are made of bronze to resist corrosion and to insure spark-free operation. As a result, chemicals and inflammable or explosive liquids can be handled safely.

Heavy-duty thrust and radial bearings support the two-part non-clogging impeller, which is mounted on a stainless steel shaft. The bearings are double-sealed to protect them and the air motor from contamination or damage by dirt or corrosive liquids, the firm states.

Requiring no priming, the pump is ready for instant use. It is 19½ inches high and can be passed through a 9×11-inch hole. Any liquid over 1½ inches deep can be picked up. Solids more than ¾ inch in size are blocked out by the integral strainer. The pump can handle 410 gpm at a 10-foot head and 168 gpm at a 50-foot head when operated at 100 psig with 97-cfm air consumption.

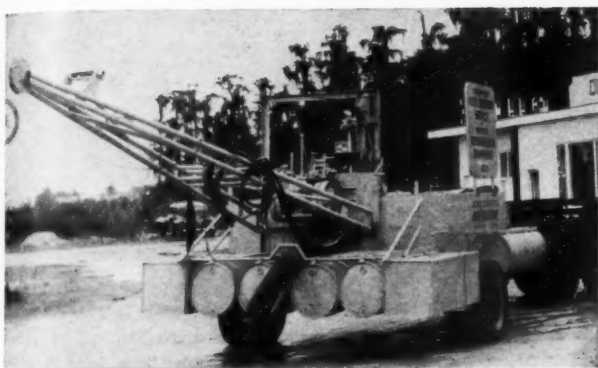
For further information write to Schramm, Inc., 900 E. Virginia Ave., West Chester, Pa., or use the Request Card at page 18. Circle No. 78.

Grating and treads

■ A bulletin on grating and treads is available from the Blaw-Knox Co. The bulletin presents descriptions on electroforged, riveted, rectangular, diagonal, U-type, and T- interlocked gratings and treads. Tables on safe loads are also included in the bulletin.

To obtain Bulletin No. 2527 write to the Blaw-Knox Co., Grating Department, P. O. Box 1198, Pittsburgh 30, Pa., or use the Request Card at page 18. Circle No. 63.

CONTRACTORS AND ENGINEERS



The Rockland Sandpiper 6-inch dredge is completely portable with dual or tandem wheels. The wheels need not be removed when the rig is floated as it draws only 38 inches.

Portable dredge draws 38 inches of water

■ A portable dredge that draws only 38 inches with its running gear still mounted is available from the Rockland Allied Equipment Co. The Sandpiper is a 6-inch dredge with a capacity of from 35 to 75 cubic yards per hour, depending upon the material encountered.

According to the manufacturer, the center of balance is well below the water line so that it is impossible for the dredge to overturn, even in a severe storm. For extra flotation there are additional ballast tanks inside the main tank section.

The Sandpiper is equipped with 20-inch dual wheels or tandem wheels, as required. The heavy-duty suction pump is powered by a 100-hp diesel engine through a Diamond roller chain. Suction and discharge lines are located at water level for ease in priming and to lessen the resistance to the flow of sand. The boom is 19 feet long.

For further information write to the Rockland Allied Equipment Co., 3778 W. Colonial Drive, Orlando, Fla., or use the Request Card at page 18. Circle No. 117.

Device measures volume by air displacement

■ An instrument for determining either absolute or apparent volume of substances by air displacement is available from D. Ballauf Mfg. Co., Inc. The Model VM500A Volumeter is recommended for field or laboratory use. It makes possible the rapid determination of specific gravity, moisture content, density, and other physical properties of materials.

The Volumeter's over-all dimensions are approximately 7 inches outside diameter x 14½ inches high. It weighs 20 pounds. The sample chamber has an inside diameter of 3 inches and is 7 3/16 inches deep.

A special version of the Volumeter, the Model VM500B, designed for testing densities of 4-inch-diameter asphalt concrete cover, is available with a sample chamber 6½ inches deep and an inside diameter of 4 inches.

For further information write to D. Ballauf Mfg. Co., Inc., 619-21 H St. N. W., Washington 1, D. C., or use the Request Card at page 18. Circle No. 119.

For more facts, circle No. 287→

New wet-cutting blade has reinforcing

■ A new wet-cutting three-ply reinforced breakage-resistant abrasive blade for masonry materials is available from the Eveready BrikSaw Co. The Tuffie blade is reinforced throughout with Fiberglass. For three-way protection, it has additional reinforcing on both sides, at the hub, the company reports.

The new blade is offered in a complete range of specifications for cutting all types of masonry materials—soft, medium, or hard. According to the company, it provides low-cost

cutting efficiency, longer blade life, and increased safety. It is especially recommended for use when the control of dust is a necessity.

The Tuffie wet-cutting masonry blade is available in 14-inch diameters and can be used on all makes of wet-cutting masonry saws, the company advises.

For further information write to the Eveready BrikSaw Co., 1509 S. Michigan Blvd., Dept. 549, Chicago 5, Ill., or use the Request Card at page 18. Circle No. 5.

Euclid Scrapers and Crawlers are your best investment



Overhung engine type Scrapers of 7, 12, 18 yds. struck capacity

Powered by engines of 143, 218 and 300 h.p., these scrapers have heaped capacities of 9, 16 and 25 yds. Advanced design of Euclid's hydraulic lever action, low bowl and 4 section cutting blade provides fast, easy loading. The 18 yd. model has Torqmatic Drive... all have NoSpin differential and Euclid planetary drive axle... unequalled accessibility of the power train and major components.

Four-wheel Tractor Scrapers

These 12, 18 and 24 yd. scrapers have maximum stability for rough roads and high speed hauls. At 3:1 slope heaped capacities are 14, 20 and 27 yds. A 200 or 218 h.p. engine with 5-speed transmission powers the 12 yd. scraper... drive tires are 21.00 x 25 with 24.00 x 25 optional. The 18 yd. scraper has 300 h.p. with 3-speed Torqmatic Drive... standard tires are 24.00 x 25 with 29.5 x 25 optional... a 17 yd. bottom-dump is interchangeable with the scraper. The 24 yd. scraper has a 300 or 335 h.p. engine with 4-speed Torqmatic Drive and 27.00 x 33 tires... 33.5 x 33 drive tires are optional equipment.



TC-12 Twin-Power Crawler

A completely new concept in tractor design and performance, this Euclid Crawler has two 218 h.p. engines for a total of 436 h.p. There is a separate Torqmatic Drive for each track. Top speed is 8 m.p.h. —change from one speed range to another or to one of the three reverse speeds is made under full power. Planetary drives can be serviced without removing track, frame or drive sprocket. Operating weight, bare, is 62,500 lbs.



Twin-Power "Euc" Scrapers

These scrapers have capacities, struck, of 18 and 24 yds. — heaped at 3:1 slope, 21 and 27 yds. Both models are powered by two engines, each with Torqmatic Drive, and have 27.00 x 33 tires with 33.5 x 33 optional. The Model TS-18 has a total of 436 h.p. Tractor of the Model TS-24 has a 300 h.p. engine—scraper wheels are driven by a 218 h.p. engine—a total of 518 h.p. "Twins" outperform other scrapers by a wide margin—they self-load and work under conditions that stop other scrapers.

Your Euclid Dealer will be glad to provide information on the complete line of "Euc" Rear-Dumps, Bottom-Dumps, Scrapers, and Crawler Tractors

EUCLID DIVISION, GENERAL MOTORS CORPORATION, Cleveland 17, Ohio



Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE





A complete line of pile hammer leads, offered in five basic types, features all-welded tubular sections said to give high strength and rigidity with minimum weight.

Line of hammer leads offer high strength

■ A new and complete line of pile hammer leads for attachment to crawler and truck cranes is announced by the McKiernan-Terry Corp. The structures feature all-welded tubular sections that give high strength and rigidity with minimum weight, the company reports.

Five basic lead types are available, to which additions and variations can be made to suit particular requirements. The leads are sectionalized for easy transport and erection.

Traditionally, pile hammer leads have been cut and fabricated by the contractor or local welding shops. Substitution of leads specifically engineered to perform the pile driving jobs that a particular contractor will undertake eliminates the need for a crane that is heavier than is actually necessary, a pile driver that is forced to do its task through time-consuming maneuvers, and a set of leads that is unwieldy, unsuitable to the operation, or undependable, the company states.

For further information write to the McKiernan-Terry Corp., 100 Richards Ave., Dover, N. J., or use the Request Card at page 18. Circle No. 22.

Hydraulic canal dredges

■ The Dragon line of dredges featuring hydraulic one-man control of all operations is detailed in a brochure from the Ellicott Machine Corp. The dredges are designed particularly for use in narrow, shallow canals and other small inland waterways. The line consists of four canal dredges of 6, 8, 10, and 12-inch discharge pipe size. The 12-inch dredge requires 16 feet of working space.

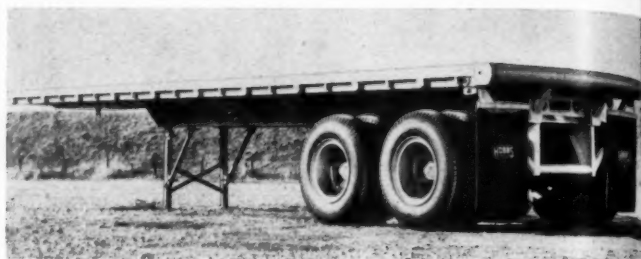
A cutaway drawing shows the eight main components of the Dragon canal dredge. Pictures and text illustrate the many portability features. A performance specification chart lists capacity data on each model.

To obtain Bulletin 850 write to the Ellicott Machine Corp., 1611 Bush St., Baltimore 30, Md., or use the Request Card at page 18. Circle No. 95.

Trailer designed to carry medium-sized equipment

■ A new medium-duty equipment trailer is available from Hobbs Trailers. The rig can handle up to 45,000 pounds of distributed payload. The trailer itself weighs 10,600 pounds.

Underconstruction of the trailer, which is available in 28, 30, and 32-foot lengths, features two wide-flanged center beams with gusset-welded cross-members spaced on 18-inch centers. For added strength, four braces are welded to each center beam and extended to the 7-inch channel side rails.



The tandem-axle trailer has a rolling tailpipe with heavy-duty ball bearings and two overload rollers built into the rear section. Flush flooring is said to facilitate loading,

and flat-footed jack legs keep the trailer from bogging down in soft ground under the weight of heavy loads.

For further information write to



Ideas For Earthmoving

TWIN-POWER SETS NEW RECORD

ON SCORES OF JOBS

Gives production and cost advantages not offered by other equipment



New "Euc" has struck capacity of 24 yds.

This Model TS-24 is Euclid's latest development in Twin-Power Scrapers. It has a struck capacity of 24 yds. and 32 yds. heaped at 1:1 slope. Tractor is powered by 300 h.p. engine with 3-speed Torqmatic Drive. The rear axle is driven by a 218 h.p. engine with separate torque converter and semi-automatic transmission. Hydraulic steering provides full 90° turns. Tires are 27.00 x 33 standard with 33.5 x 33 optional. Top speed with full payload is 26 mph. using standard size tires.

Rush Job Finished 4 Months Ahead of Schedule

SOUTH DAKOTA—J. H. Beckman Construction Co. of Sioux Falls was awarded a grading contract for 6.8 miles of U. S. Route 16 that involved 360,500 yds. and had to be completed in 6 months. Four Euclid Twin-Power Scrapers, supplemented by 3 other scrapers, some crawler equipment and 3 motor graders, were put on the job and worked 11 hour shifts six days a week.

Because of their Twin-Power and all-wheel drive, the "Eucs" worked independently without assistance from pusher tractors. On one cut they self-loaded 20 bank yards of gumbo and shale in about 45 seconds—completed the 870 ft. haul cycle over cut and fill in an average of 2.83 minutes. Hourly production was 353 yards. Self-loading sand and top soil in another cut the Euclids averaged 21.6 yards in less than a minute. The complete 600 ft. cycle took about 2½ minutes and hourly production averaged 415 bank yards.

With these versatile, fast dirt-movers on the job, grading was completed far ahead of the rush schedule.

Versatility Pays Off at Noxon Rapids

MONTANA—Two Twin-Power Euclid Scrapers are being used by Morrison-Knudsen Co., Inc. at Noxon Rapids Hydro-electric Project on the Clark Fork River in Western Montana. They are building roads, helping with excavation at the dam site and supplementing a large fleet of other Euclid hauling equipment.

Working in heavy wet clay on sand and gravel the "Twins" pull up loads of 18 yds. or more with help from pusher tractors. With single tires and all-wheel drive, they work in soft and rutted areas and have plenty of power to move heaped loads over long hauls at travel speed.

Owner says "Euc" Twin-Power Scrapers have revolutionized dirt moving in the West

SOUTH DAKOTA—Harris Construction Co. moved 1,000,000 yds. of shale for a railroad relocation job at Mowbride with only 6 scrapers, one motor grader and one roller. That's probably as small a spread of equipment as you'll ever find on a project of this size yet production averaged 13,000 yds. per 10-hour shift. Cycle time on a 1600 ft. haul was about 4 minutes . . . each "Twin" averaging 225 yds. per hour. Owner Ken Harris has found the Twin-Power Scraper the most efficient dirt mover he's ever used and this railroad job wasn't the first time he had parlayed Twin-Power into low cost high production.

In April of 1956, Harris set a new earthmoving record on Montana highway work by moving 90,000 yds. on hauls up to 4000 ft. during six 10-hour shifts. At the same time he was working on the road job, Harris had a 1,200,000 yd. subcontract at Glasgow Air Base, 26 miles away. He moved his "one man earthmoving crews" from one job to another according to weather conditions and work requirements. The "Eucs" were used to the best advantage all the time because there was only an hour's travel time involved and they worked independent of pusher tractors normally needed by scrapers for efficient operation.

3 Million Yard Waste Dump Moved by "Twins"

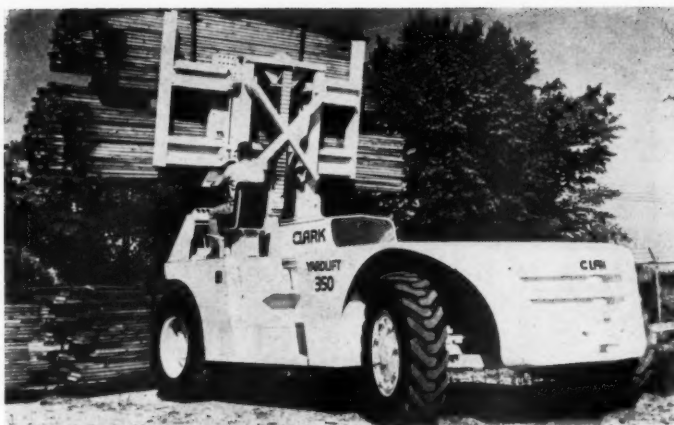
ONTARIO, CANADA—Moving an old waste dump from a drained lake bed presented a tough problem for Steep Rock Iron Mines, Ltd. The material, consisting of wet silt, clay, gravel ore, stone and boulders, weighed about 3200 lbs. per cu yd. Hauling conditions were difficult because of the soft, spongy footing so it seemed that the job would have to be truck-shovel operation. In spite of these adverse conditions a Twin-Power Scraper was demonstrated on a haul of 5800 ft. with grades up to 10%. The performance was so outstanding that four machines were purchased on the basis of it. They are now effecting major savings in an almost "impossible" scraper job.

Twins Tackle Tough Road Job

VIRGINIA—Contractor Robert T. Main used a Twin Scraper TC-12 Crawler in a highway cut that had stopped other scrapers because of the extremely soft footing. This combination of Euclid "Twins" had plenty of power, traction and flotation to get the job done efficiently—it replaced a dragline that was brought in when it looked like the job couldn't be done by scrapers.

Though the new Hobbs medium-capacity equipment float can handle distributed payload of 45,000 pounds, it weighs only 10,600 pounds.

Hobbs Trailers, 609-33 N. Main St., Fort Worth, Texas, or use the Request Card at page 18. Circle No. 47.



◀ The operator's seat on the new Clarklift Y-350 is to the left front, assuring him of full visibility when raising or placing a load.

Outdoor fork truck gives operator full visibility

■ The operator of the new 35,000-pound capacity pneumatic-tire fork truck available from the Clark Equipment Co. sits above the left front fender for a clear view of the load. The Clarklift Y-350 is recommended for heavy lifting and tiering work around construction sites and similar outdoor locations.

Placing the driver at the left front is said to insure full visibility when raising or placing a load. Direction selector levers and lift-lower-tilt levers are located on the steering column for fingertip control. Power steering and air service brakes are standard.

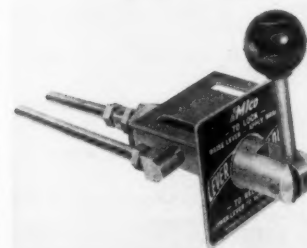
A power-shifted four-speed transmission coupled with a torque converter and a six-cylinder Hercules gasoline engine provides the power for the new rig. It rolls on deep-treaded 14:00x24 tires.

The hydraulic system is controlled by a feather-type valve with built-in adjustable relief valves and gives a lift speed of 26 fpm when loaded. The Y-350's maximum speed is 16 mph in both directions.

For further information write to the Clark Equipment Co., Industrial Truck Division, Battle Creek, Mich., or use the Request Card at page 18. Circle No. 9.

Hydraulic unit assures ample braking pressure

■ A hydraulic brake accessory that assures positive, recommended braking pressure while a vehicle is parked is available from Minnesota Automotive, Inc. The Mico Lever Lock works on all automotive, truck, or bus hydraulic systems. Manually operated, it does not interfere with normal brake operation.



The Mico Lever Lock assures hydraulic braking pressure while a vehicle is parked.

To set the Lever Lock, the operator raises the lever and steps on the foot pedal. This supplies safe holding power, even for the heaviest of loads, the manufacturer reports. To release the lock, the lever is lowered.

All necessary fittings are packaged with the unit. Operating instructions are etched into the mounting plate.

For further information write to Minnesota Automotive, Inc., 1101 N. Front St., Mankato, Minn., or use the Request Card at page 18. Circle No. 72.

◀ For more facts, circle No. 288

thmovers

EW RECORDS

tiond cost advantages bny other equipment



Improved Model of "World's Most Powerful Crawler"

Euclid's Model TC-12 Twin Crawler now has more horsepower, more work area and more accessibility than any other production tractor. It is powered by two 218 h.p. engines with separate Torqmatic Drives on each track—a total of 436 h.p.! Standard shoes are 27" wide and there are now 8 track rollers to give still better balance with heavy attachments.

"Twins" Move Nearly 40,000 Yds. Per Day

NEBRASKA — Western Contracting Corp. of Sioux City, Iowa, used 10 Euclid "Twin" Scrapers and 5 Euclid TC-12 Crawlers to move 3 million cu yds. of material on a plant site grading project with a 5 month completion limit. The scrapers, equipped with 6 yard sideboards and push loaded by the big "Twin" crawlers, were able to get maximum production, the scraper fleet worked 20 hours per day and moved close to 40,000 cu yds. of material daily on hauls of 1500 feet.

Couldn't Believe His Own Stop-Watch

IOWA — When a contractor-visitor to Wilbur Nielsen's road grading job made a time check on 3 Euclid "Twin" Scrapers he sent to town for another stop-watch because he couldn't believe the time registered on the one he'd used!

The "Twins", equipped with 6 yd. sideboards and push loaded by a torque converter crawler tractor, got loads of better than 24 yds. in an average of 50 seconds. In spite of the mile and a half long haul, the three scrapers averaged 336 yds. per hour. Working 10½ hour shifts six days a week, with an availability record of 95%, Nielsen's "Eucs" completed the grading well ahead of schedule.

TWIN
EDITION
★ ★

"TWINS" are
making
headline
news!

Twin-Powered Euclid Equipment is out-performing all other equipment by a wide margin — the profit margin — on all kinds of earth-moving. With "Twins" in your fleet you'll have a bidding advantage that can pay off in more jobs and more profit. Get the facts from your Euclid dealer and you'll know why owners everywhere have proved Euclids are your best investment.



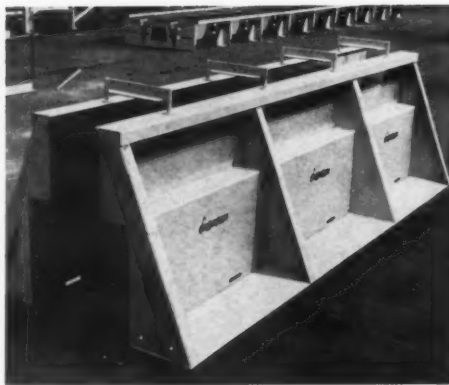
EUCLID DIVISION
GENERAL MOTORS CORPORATION
Cleveland 17, Ohio

Inverted T casting form for prestressed beams

■ A new inverted T concrete casting form is available from the Food Machinery and Chemical Corp. The Form-Crete form produces a prestressed concrete member that is designed for use with double T members in building construction.

The inverted T members are placed on supporting columns across the width of the building in as many rows as are required at 60-foot intervals. The double T members are then placed perpendicular to the ends of the inverted T members and are supported by the latter's flanges.

According to the company, the inverted T shape has advantages over the I beam it replaces. About a foot



Form-Crete inverted T casting forms are available in 10-foot lengths with pilot liners available for various slab thicknesses.

of space can be saved in construction by placing the double T in the cut-back portion of the inverted T, and the stem section of the inverted T member is sandwiched between the

ends of the double T members with consequent greater stability of construction.

Form-Crete inverted T casting forms are supplied in 10-foot lengths

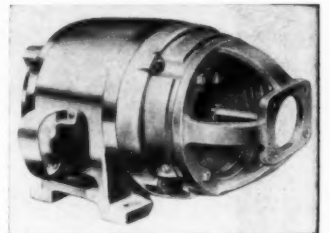
which can be connected to produce members of any required length. They are lock-up-type forms with pilot liners available for various slab thicknesses.

For further information write to the Food Machinery and Chemical Corp., P. O. Box 1718, Lakeland, Fla., or use the Request Card at page 18. Circle No. 48.

Hydraulic pump can be mounted on pump motors

■ A special series of motors, designed particularly for hydraulic pumps, is announced by U. S. Electrical Motors, Inc. The motors, available in drip-proof, totally-enclosed, and explosion-proof designs, incorporate a face-type registered bracket for mounting the pump on the motor.

This method of coupling eliminates separate base plates or platforms; achieves a shorter, more compact package; assures built-in alignment



New U. S. Electrical motors for hydraulic pumps incorporate a face-type registered bracket for mounting the pump on the motor.

of the pump to the motor; and reduces installation time, the firm reports. The design of the bracket permits easy access to the motor shaft, coupling, and pump mounting bolts.

In the drip-proof enclosure, type H motors are available to 20 horsepower, and type SC, to 125 horsepower. Totally-enclosed and explosion-proof designs are available in Types J and E to 10 horsepower, and in Types SD and SE to 125 horsepower. For double-end pump installations where low pressure-high volume and high pressure-low volume pumping is required, U. S. hydraulic pump motors can be supplied with double-end shafts and mounting brackets for supporting two pumps.

For further information write to U. S. Electrical Motors, Inc., Box 2058, Terminal Annex, Los Angeles 54, Calif., or use the Request Card at page 18. Circle No. 123.

Air-placed concrete

■ A bulletin showing progress photographs in the guniting of typical ditches and channels used for water control is available from the Gunite Contractors Association. A right and wrong example of such air-placed concrete projects is also shown. Subjects covered by the bulletin include preparation of the subgrade, placing of headers, and finishing.

To obtain this literature write to the Gunite Contractors Association, 714 Olympic Blvd., Los Angeles 15, Calif., or use the Request Card that is bound in at page 18 of this issue. Circle No. 73.

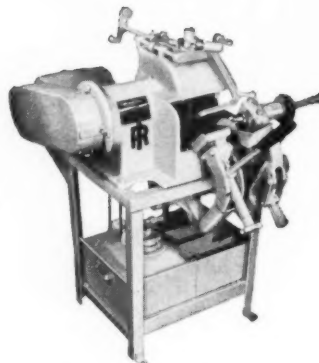
CARSET JACKBITS

are **PRECISION MADE**

for **HIGHEST PERFORMANCE**

*Maintain That Performance
by sharpening with
the NEW JC-3 JACKBIT GRINDER*

- ▲ Grinds cutting faces to precisely correct profile for maximum drilling efficiency.
- ▲ Grinds bit gage to proper clearance.
- ▲ Eliminates waste of over-grinding.
- ▲ Greatly multiplies operator output.
- ▲ Available with electric, air or gasoline engine drive.



JC-3 Electric Drive Grinder

TO MAINTAIN the unequalled drilling speed of a NEW Ingersoll-Rand Carset Jackbit—and get maximum feet of hole from each bit—resharpening should be done to close tolerances and without unnecessary waste of the cutting material.

All of these requirements are met to excellent advantage with the new JC-3 Jackbit grinder—far more quickly, easily and accurately than by hand grinding methods. Ask your I-R representative for complete information on this time-saving, cost-saving machine. Or send for a copy of Bulletin 4187.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 289

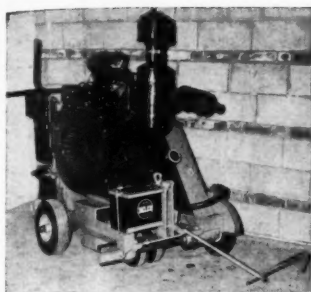


Ingersoll-Rand

11 Broadway, New York 4, N. Y.

COMPRESSORS • TURBO-BLOWERS • ROCK DRILLS
AIR TOOLS • CENTRIFUGAL PUMPS • CONDENSERS
GAS AND DIESEL ENGINES

15-518



The Windsor Model L70-SS concrete sawing machine is a 70-hp rig that will cut to a depth of 8½ inches using a 22-inch diamond or abrasive blade.

Concrete sawing machine cuts to 8½-inch depth

■ A self-propelled concrete saw that will cut to a depth of 8½ inches using a 22-inch diamond or abrasive blade is available from the Windsor Machinery Corp. The Model L70-SS is powered by a 70-hp Lycoming CV4-180 engine.

One operator controls placing, depth of cut, speed of cut, and all other operations. All controls for the engine, saw, and water are located at the operator's normal working position. A hydraulic system raises and lowers the blade. Once the blade is raised out of the cut, the sawing machine is easily tilted onto its rear wheels for repositioning, the company reports.

The machine is equipped with a 6-volt starter, generator, and battery. Large zero-pressure tires maintain ease of handling and permit early cutting of green concrete without marking the surface, the firm reports. An automatic overload protector system is designed to prevent damage to all components in case of jamming or faulty operation.

For further information write to the Windsor Machinery Corp., 85 Grassmere Ave., Elmwood 10, Conn., or use the Request Card at page 18. Circle No. 112.

Steel lifting clamps

■ Clamps for lifting steel sheets, structural steel, and steel drums are described in a catalog from J. C. Renfroe & Sons, Inc. The line of Superior clamps are made with capacities of from 1 to 20 tons with a 5 to 1 safety factor.

Use of the clamps eliminates the need for welded pad eyes and screw clamps. Models are available to lift steel sheets by the edge or horizontally flat. Other models will lift drums singly or three at a time. The Superior clamps feature the Safety Snap Lock, a compression-type spring lock that is activated by a lever.

The catalog gives specifications and descriptions of eight models, each available in various capacities. The special features of each model are pointed out. Also included is an illustrated parts identification sheet for each model.

To obtain Catalog No. 950 write to J. C. Renfroe & Sons, Inc., 1259 W. State St., Jacksonville 1, Fla., or use the Request Card at page 18. Circle No. 91.

For more facts, circle No. 290→

AS MUCH AS 235 TPH WAS PUT DOWN by a pair of Blaw-Knox PF-90 bituminous paver-finishers working in tandem on one section of the Massachusetts Cross-State Turnpike. It was the first time that any paver had been adapted to lay a 16-foot-wide mat in one pass, the company reports. To convert one of the rigs to a 16-foot machine required adding two 4-foot extensions. This enabled the Nello L. Teer Co., Durham, N. C., to pave a 4-foot shoulder with a 4 per cent grade and 12 feet of roadway with a 2 per cent grade between the shoulder and the centerline. The second machine followed at about 150 feet doing the adjacent 12-foot-wide strip. For further information on the pavers write to the Blaw-Knox Co., 300 Sixth Ave., Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 43.



Now MOVE 40 TON LOADS AT LOWEST COST WITH THIS Euclid R-40



TWIN-POWER REAR-DUMP

470 OR 500 TOTAL H.P.
TORQMATIC DRIVES
18.00 x 25 TIRES
80,000 LB. PAYLOAD
26 CU. YDS. STRUCK

This model R-40 is the newest addition to Euclid's complete line of Rear-Dump haulers. Built for jobs where big loads must be hauled, it incorporates all of the advance design features that have made "Eucs" the standard of performance for hauling heavy excavation in construction, mine, quarry and industrial service.

Two power trains—each with separate engine, 3-speed Torqmatic Drive and planetary drive axle—provide plenty of power to move capacity loads over tough haul roads and steep grades. The tandem axles are spring mounted to permit fast travel on good haul roads . . . the R-40 has a top speed of 26 mph with full payload.

Hydraulic booster steering makes this big Euclid easy to handle in close quarters and on tough hauls. Dumping angle of 67° and smooth interior of exhaust heated body assure quick, clean shedding of the load into hoppers, over the bank, or on the fill.

Your Euclid dealer will be glad to discuss the model R-40 and your off-highway hauling problems. He'll provide a production-cost estimate for present or planned operations, and can show you why *Euclids* are your best investment.

EUCLID DIVISION, GENERAL MOTORS CORPORATION, Cleveland 17, Ohio



Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE





The Ross Porta-Plant produces 200 yards of material for ready-mix concrete in an eight-hour working day. It can be towed at road speeds by a 1/2-ton truck.

Portable plant produces 25 cubic yards per hour

■ A portable concrete batch plant that will turn out 200 cubic yards of material in an eight-hour day is available from Ross & Son. The Porta-Plant can be towed behind a 1/2-ton truck at normal road speeds.

The bin is made of heavy-gage steel and has a capacity of 5 cubic yards. The covered conveyor is 35 feet long and 24 inches wide. It has a four-ply belt and sealed bearings, and operates at a 15-degree incline. Three Cardinal three-beam scales—with 10,000, 8,000, and 3,000-pound capacities—have over and under indicators fully visible to the operator.

Power is supplied by an 8-hp air-cooled gasoline engine with a reduction gear box mounted 3 1/2 feet above ground level for easy access. The 7 1/2-foot bin height makes the bin accessible to most front-end loaders. According to the manufacturer, the plant can be set up for operation in five minutes.

For further information write to Ross & Son, Box 446, Brownwood, Texas, or use the Request Card at page 18. Circle No. 111.

Proper equipment financing

■ A discussion of equipment financing for contractors is contained in a booklet from the C.I.T. Corp., entitled "Machines, Money, and the Contractor".

The booklet explains how the proper combination of equipment and a plan to finance it is of the utmost importance to the contractor. Another section deals with the advantages of C.I.T. financing.

Among the advantages reported are that C.I.T. financing builds up the contractor's equipment fleet while keeping his ready cash at an adequate level, permits him to decide on a repayment schedule, and assures him of informed handling of his requirements.

C.I.T.'s pay-as-you-depreciate plan is explained and discussed. Bar graphs help illustrate the advantages of this plan. Other plans detailed are the equal monthly payment plan, the winter skip-payment plan, the lease and rental plan, and the capital loan plan.

To obtain this booklet write to the C.I.T. Corp., 390 Fourth Ave., New York 16, N. Y., or use the Request Card that is bound in at page 18. Circle No. 100.

Spraying equipment used for gear lubrication

■ Gear spray equipment that provides maximum uniform coverage of open gear faces with clean, fresh lubricant direct from the original drum is available from the Alemite Division of the Stewart-Warner Corp. The Versatal machine is said to accomplish the gear lubrication automatically without the splashing or throwing of material.

The machine permits the operator to stay at a safe distance from the gears, yet allows him to apply lubricant to both the bull gear and the pinion simultaneously. The machine

also provides a savings of up to 80 per cent of lubricant wasted in hand application, the company reports.

Versatal units range from manually controlled applicators to completely automatic units. Units are available to accommodate 100-pound and 55-gallon containers with either stationary or mobile set-ups.

For further information write to the Alemite Division, Stewart-Warner Corp., 1826 Diversey Pkwy., Chicago 14, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 83.

To speed road-building



Gar Wood Dozercasters are matched to the most powerful tractor of them all . . . the Euclid TC-12. A rugged C-frame supplies maximum rigidity against bending or distortion. Screw-type thrust arms provide easy adjustment . . . are attached with "deep anchored" lugs that can't bend or smash. Heavy-duty swivel bearing lets one man angle blade. Gar Wood cable-control units offer quick, accurate control of the 18-ft. Dozercaster moldboard.

On Gar Wood 75's, independent travel is one of many features that speed production. Operator can hoist or swing while moving. Worm-driven boom hoist with spring-loaded brake permits fast hoisting with complete safety. Production is further speeded by ease of maintenance of the compact machinery deck . . . the 75B gets back to work faster. It's built by specialists in 3/4 yard excavators!

GAR WOOD

PLANTS IN WAYNE AND

CONTRACTORS AND ENGINEERS



"Well, you've got starting down pat—now for stopping."

The power-driven Hydro-Fog is said to require approximately half as much fluid as other machines because of the fineness of its spray. It is used for spraying concrete forms.



from clearing to concrete— go **GarWood**

During the next ten years, speed will be of primary importance if production is to keep pace with proposed schedules of the new highway program. Where work on segments of this program is already under way, Gar Wood equipment is proving its ability to speed production, from clearing to concrete!

With Gar Wood equipment, production is faster because of advanced design. Component parts function with that degree of efficiency needed for fast, steady production. Find out how you can go Gar Wood "all the way." Call your Gar Wood dealer, or write direct to: Customer Service Department, Gar Wood Industries, Inc., Wayne, Mich.

Gar Wood - St. Paul dump bodies are structurally stronger at all critical stress points... built to take the punishment of shock loading. Matched with "Strong-Arm" hoists, they offer the smoothest, most dependable team on the market. "Strong-Arm" design eliminates one-sided lifting strains. Dumping is fast, safe... even on steep slopes!



Gar Wood - Buckeye finegraders can finish 100 feet of 25-foot cross-section per hour in the toughest conditions. Many users report 400-foot-per-hour production in ideal conditions. Power for extra-tough cuts is supplied by positive, non-slip chain drive. Hardened steel cutting-teeth offer long life. Power reverse and hydraulic lift save valuable production time.



Machine sprays forms with fog-like blanket

■ A power-driven unit designed primarily for spraying concrete forms, is announced by the Hydro-Fog Equipment Co. According to the manufacturer, the unit reduces the consumption of spray fluid approximately 50 per cent, no matter what type of fluid is used. This is because of the fog-like fineness of the spray.

The self-contained unit consists of power supply, fluid tank, and 60 feet of hose. A hand-operated hose reel is optional. Pressure up to 300 psi comes from a 72 gph self-priming Sundstrand pump driven by a 2-hp Clinton gasoline engine. A pump bypass permits the nozzle to be shut off without damaging the pump or engine.

The fluid tank has a capacity of 30 gallons. It is made of heavy-gage welded steel and has full-length handles on both sides to facilitate carrying. The entire unit weighs 310 pounds and measures 32×22×32 inches.

For further information write to the Hydro-Fog Equipment Co., 2500 N. Main St., Rockford, Ill., or use the Request Card at page 18. Circle No. 55.

Drafting room efficiency

■ A check list showing every type of product used in a modern well-equipped drafting room is available from the Frederick Post Co. The check list covers equipment and supplies from A to Z and suggests several specific ways to cut down waste motion, eliminate time-consuming methods, reduce fatigue, and save space.

To obtain this list write to the Frederick Post Co., 3630 N. Avondale Ave., Chicago 18, Ill., or use the Request Card at page 18. Circle No. 37.

Generating equipment

■ Belt-driven generators and electric generating plants manufactured by the Pioneer Gen-E-Motor Corp., are covered in a catalog from the company. The units detailed have capacities ranging up to 12,000 watts.

To obtain this catalog write to the Pioneer Gen-E-Motor Corp., 5841 W. Dickens Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 86.

INDUSTRIES, INC.

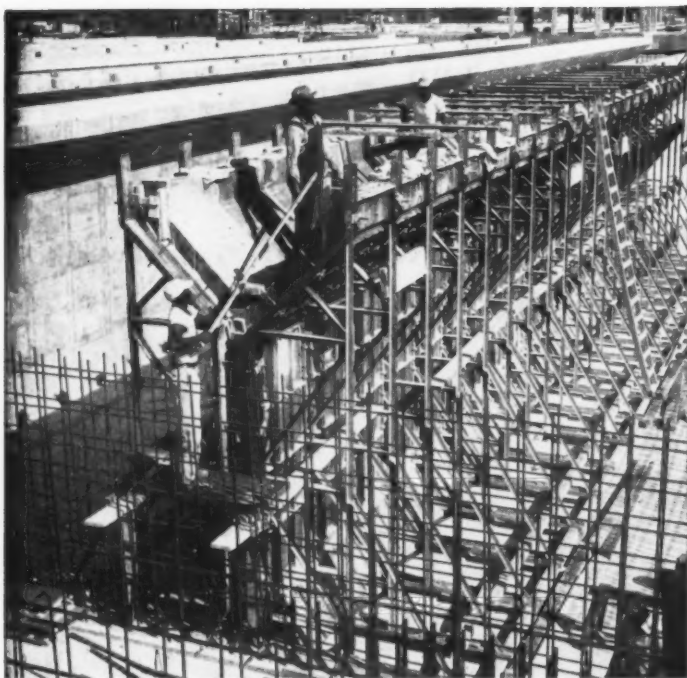
Wayne, Michigan

YPSILANTI, MICH.; FINDLAY, OHIO; MATTOON, ILL.; RICHMOND, CALIF.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 291

Sand drains to stabilize pike's urban extension

Some 1,200 vertical drains installed on 1,000-foot-long section; surcharge consolidates underlying material for roadway stretch



Special Y wall forming system makes for simplified stripping operation. 100% reusability of all materials. Note complete absence of lumber normally required for shoring and bracing on this type of structure.

CUTS MATERIAL COSTS with Pre-Fab Form System on Sewage Plant Job

In the construction of the Miami Sewage Treatment Plant Job the Paul Smith Construction Co., of Miami, Florida chose to use the Uni-Form Panel System in the forming of one million sq. ft. of contact area. The contractor estimated that the use of the Uni-Form System *saved 40 percent in material costs alone*. In addition, faster form erection with fewer men kept the job moving ahead of schedule and reduced estimated labor costs considerably. These fine results were obtained even though this was the contractor's first experience with the Uni-Form Panel System.

This considerable savings in material and labor was realized in spite of intricate Y wall forming and pipe intersections which causes complicated forming problems with conventional forming systems.

Pre-fabricated, ready to use—completely engineered to handle most forming problems, the Uni-Form Panel System provides such advantages as simple assembly—minimum one side alignment and bracing—automatically accurate wall widths—positive internal spreading—faster stripping and maximum re-usage to give the contractor lowest all around form costs.

Y wall trusses designed to member with

standard Uni-Form Panels formed a completely automatic system for handling the special forming problems, and were big factors in the economy and speed obtained on the job. Simple assembly of Standard Uni-Form Panels on the trusses eliminated many of the aligning, bracing and spreading problems usually encountered in Y wall construction. In addition to simplified forming the combination system of standard Uni-Form Panels and trusses eliminated many of the problems normally encountered in the stripping of a wall section of this type. The contractor was well pleased with all phases of his forming and stripping operations.

Why not investigate the many advantages the Uni-Form Panel System can bring to you? Write for the Uni-Form Catalog—or better yet, send us a set of plans for an estimate on your next job. Let us prove to you as we did to the Paul Smith Construction Co., that the Uni-Form Panel System can cut your forming costs.

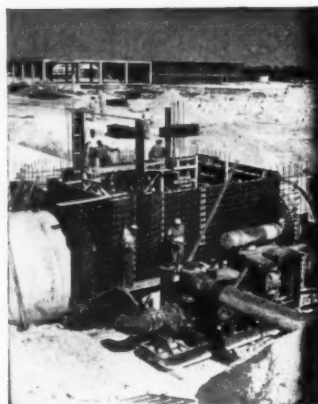
UNIVERSAL FORM CLAMP CO.

1238 N. Kostner Avenue • Chicago 51, Illinois

Branch Offices and Warehouses:

Los Angeles • San Leandro, Calif. • Houston, Texas
Cleveland, Ohio • Baltimore, Md. • Atlanta, Ga.

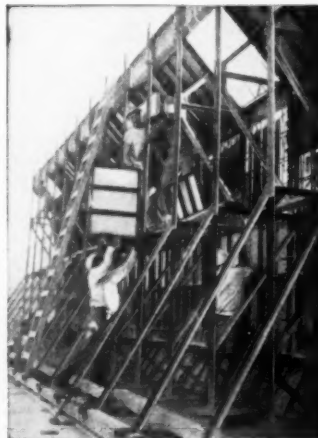
For more facts, use Reader-Reply Card opposite page 18 and circle No. 292



Intricate forming in restricted areas presented no problem. Uni-Form Panels erected aligned and braced one side eliminated difficulties normally encountered in placement of reinforcing steel. Note Uni-Form Panels around large precast pipe.



One side aligning and bracing provides clear unobstructed working areas increasing job efficiency.



Y wall trusses incorporated alignment, bracing, shoring and scaffolding requirements.

About 1,200 vertical sand drains—the first used in the state of Rhode Island—are being placed in a 1,000-foot-long, soft, unstable section of the Louisquiset Pike's new urban extension out of Providence, R. I.

This work is part of a mile-long \$1,206,000 grading job scheduled to be completed by Campanella & Cardi Construction Co., Providence, in September. This firm also handled an adjacent 2½-mile, \$990,000 grading and drainage project, which was completed earlier this year.

The sand-drain area, once Leonard Pond within the city limits of Providence, was first cleared and grubbed, then a 3½-foot-thick sand blanket mat was laid. This was topped with a 1½-foot-thick working table consisting of a well-graded gravel. Material making up the blanket was graded to conform to these specifications: 100 per cent of the material had to pass the 2½-inch screen; 60 to 100 per cent had to pass the ½-inch screen; and of all the material passing the No. 4 sieve, no more than 20 per cent could pass the No. 80 sieve and no more than 2 per cent could pass the No. 200 sieve.

The gravel working table, of material graded so that not more than 15 per cent passed the No. 200 sieve, was laid in one 1½-foot lift.

Drain construction

The actual drains are being built by driving a 15-inch-diameter open-end steel tube 70 feet through the sand blanket and working table to the firm bottom of the soft, unstable mud deposits of the area. The drains are spaced on 12½-foot centers, measured longitudinally and transversely, along this 1,000-foot stretch of roadway.

After the 70-foot long tubing is cleaned out, it is filled with a well-graded, dry sand passing the No. 4 sieve having a 3 per cent maximum passing the No. 100 sieve. The working maximum of material passing the No. 100 sieve, by weight, is 6 per cent.

When a steel tube is filled with this material and capped with a 2-foot-deep clay plug at the top, the pipe is slowly withdrawn from the ground. This is done by forced air pressure, not exceeding 100 psi, acting on the clay plug while the tube is being withdrawn. This also assures a minimum disturbance of the sand drain already in the ground. A piezometer, buried in each sand drain, records the pore pressure in the drains and shows whether or not they are functioning properly.

This done, the entire area will be brought up to design grade by placing roadway fill, which is topped with a 5-foot-thick surcharge. Theory has it

CONTRACTORS AND ENGINEERS

On the stretch adjacent to the sand-drain job, the contractor has a Gardner-Denver wagon drill, powered by a Gardner-Denver 600 compressor, sink holes into a rock outcrop. This 2½-mile contract required 112,000 yards of rock excavation.



that this surcharge will consolidate the underlying material, forcing the water in the 70-foot-deep compressible stratum into and up the sand drains, through the 3½-foot porous sand blanket, and out to each side of the roadway right-of-way. As the water is forced to drain and escape horizontally through the sand blanket, mud waves will form along both outer edges of the sand blanket. These mud waves will also tend to act as a barrier, preventing any additional water in the sand blanket from escaping and thus ending consolidation of the sand-drain area.

Since the 5-foot-thick surcharge will be placed over the final design elevation of the roadway fill, no additional fill will be required if the sand-drain area settles exactly 5 feet. If there is more than 5 feet of settlement, fill will be placed to bring the completed roadway to grade.

Remaining items on this contract include 160,000 cubic yards of roadway excavation, 36,000 yards of borrow, and a 2,600-foot-long relocation of the West River that now runs along the roadway alignment. This latter item involves excavating a new 6-foot-deep channel, 20 feet wide at the bottom and 44 feet wide at the top. It is being formed by a dragline, which side-casts the spoil to build up protective berms along the sides of the channel. Mack 12-yard dump trucks are also hauling in borrow for the berms. The new channel will be protected from erosion by medium-size riprap.

Adjacent contract

The other contract, adjacent to and north of the sand-drain stretch, consisted of 2½ miles of roadway grading that included 210,000 yards of roadway excavation, 112,000 yards of rock excavation, and 600,000 yards of borrow.

The borrow material, needed for fills reaching 45 feet, was obtained from a total of ten borrow pits. A fleet of earthmoving equipment, consisting of five Mack 12-yard dump trucks, seven Euclid rear-dumps, and three Euclid bottom-dumps, was loaded by three 2½-yard shovels and an Allis-Chalmers HD-20 front-end loader.

Five Gardner-Denver wagon drills and two Gardner-Denver Air Tracs, powered by Gardner-Denver, Chicago Pneumatic, and Le Roi 600 air compressors, put down holes for the rock-blasting operations. The deepest rock cut came to 27 feet.

Both rock and borrow excavation were used to build up the fills. Both items were mixed at a ratio of one truckload of rock to every truckload

(Concluded on next page)

HYDRAPOWER
is *Profit* power!

**Semi-Integral Models
HPS-52 and HPS-70**



► **Hydrapower** is "power to accomplish" . . . "power to earn"! In short, Hydrapower is *profit* power, for vehicles of many different types.

Hydrapower Models HPS-52 and HPS-70, pictured above, are setting new standards of steering ease, safety and economy for trucks, farm machinery and industrial equipment.

You may be sure there's a Hydrapower unit to do the same for *your* product . . . because Ross makes *all three* types of hydraulic power steering—semi-integral, integral and linkage.

Ross invites discussion of *any* steering problem—power or manual.

ROSS GEAR AND TOOL COMPANY, INC. • LAFAYETTE, INDIANA
Gemmer Division • Detroit

HYDRAPOWER

For more facts, use Reader-Reply Card opposite page 18 and circle No. 293



In one of ten borrow areas used by Campanella & Cardi, Mack 12-yard dump trucks head in to be loaded by a 2½-yard shovel. About 600,000 yards of fill were needed for the longer stretch of roadway.

of borrow material. Each item was dumped by trucks and spread, in 1-foot-layers, by Caterpillar D8 tractor-dozers. One Caterpillar D9 was used to push-load the four scrapers on the job—two LeTourneau 18-yard and two LaPlant-Choate 18-yard units pulled by Cat D8 tractors.

Personnel

Robert Wetzel is the superintendent, and Russell Seidel, the bridge superintendent in charge of building three bridges along the 2½-mile stretch. This is being done under a separate \$658,000 contract by Campanella & Cardi Construction Co. James Richardson is the resident engineer and Fred Luth is in charge of the bridge construction for the Rhode Island Department of Public Works, of which Joseph Vallone is Director. C. W. Riva & Co., Providence, R. I., the consulting engineering firm for the Division of Roads and Bridges, is supervising work on the grading and sand drain installations of all contracts.

THE END

Air-placed concrete

■ A wet-mix method and a machine for pneumatically applying concrete, refractories, stucco, and other cementitious materials are described in a bulletin from the True Gun-All Equipment Corp. The True Gun-All machine is said to be able to place up to 4 cubic yards per hour at savings up to 40 per cent. It will handle concrete of any moisture content, including no-slump concrete.

The various operating features of the True Gun-All machine are listed in the bulletin. Such construction features as the volume regulator and the air control at the nozzle are illustrated. A chart compares the rig to standard pneumatic mortar equipment.

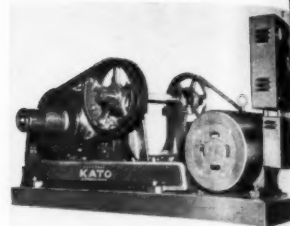
Several photographs show the machine in operation on a variety of construction jobs. Specifications and dimensions for the Model C Gun-All, which requires a compressor furnishing 125 cfm of free air at 80 psi and is powered by either a gasoline engine or an electric motor, are included.

To obtain Bulletin No. GA156 write to the True Gun-All Equipment Corp., P. O. Box 2526, Tulsa, Okla., or use the Request Card at page 18. Circle No. 136.

Push-button controls generator's frequency

■ A 5,000-watt high-frequency ac motor-generator set with a push-button control that permits automatic adjustment of output frequency is available from the Kato Engineering Co. A variable-pitch pulley arrangement permits the adjustment of the frequency from 380 to 420 cycles.

The variable-pitch pulley, mounted on an extension of the motor drive shaft, decreases in diameter as the motor is moved away from the drive pulley, increasing the generator rotor



speed and thus increasing the frequency. A fractional horsepower ac motor operates a screw-type shaft which moves the generator motor, thus changing the pulley's pitch.

■ A push-but-
watt high-fre-
generator set
ment of the
frequency by va-
the pulley.

The
3,257
420 cy-
5,000-
phase

HD-21

204 net engine hp
44,000 lb
Max. drawbar pull, 65,000 lb



This season do more BIG work per

*... with construction's best-proved torque converter tractors
... backed by 17 years of on-the-job experience
... thousands of profit-tested production models*



More efficient dozing—Matched engine-converter-transmission team lets operator choose speed range for each job as he starts ... finish most jobs without further clutching or shifting (except for reverse). With full control at throttle, he can work safely and efficiently regardless of terrain.



Faster on tough scraper jobs—These Allis-Chalmers tractors multiply torque up to four and a half times ... develop maximum drawbar pull when it's needed most ... start the load smoothly regardless of material in the cut ... automatically accelerate to the highest speed that conditions permit.



Nothing like 'em on big loading jobs—7½-3-yard HD-16G and 4-yard HD-21G tractor shovels are tough, mobile, flexible enough to pay big dividends on many projects. Operators can crowd surely and steadily ... without stalling, shifting gears or losing control of the bucket because of slow engine speed.

Longer li-
lic torque
shock and
the entire
ment—me-
less down
better pro-

▲ A push-button on this 5,000-watt high-frequency ac motor-generator set controls the adjustment of the unit's output frequency by varying the pitch of the pulley.

The generator output is 380 cps at 3,257 rpm; 400 cps at 3,428 rpm; and 420 cps at 3,600 rpm. The 14-pole 5,000-watt alternator supplies three-phase 120 to 180-volt current. Initial

power is furnished by a 7½-hp 60-cycle ac motor operating at 1,800 rpm.

For further information write to the Kato Engineering Co., 1415 First Avenue, Mankato, Minn., or use the Request Card at page 18. Circle No. 120.

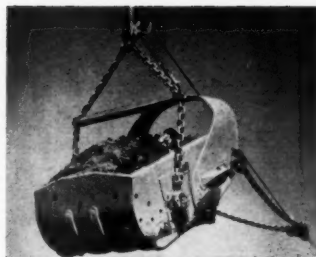
Wire rope slings

■ Three folders describing suggested applications and ordering specifications for wire rope slings are available from the Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corp. The folders describe Wickwire's

Uniflex, Multiflex and Maxiflex wire rope slings.

Each folder describes and illustrates specific applications best suited for each sling. Uniflex slings are designed for applications where abrasion is an important factor, Multiflex slings are designed for maximum load-bearing surface area, and Maxiflex slings provide superior flexibility in all directions, the company states.

To obtain these folders write to The Colorado Fuel & Iron Corp., 575 Madison Ave., New York, N. Y., or use the Request Card at page 18. Circle No. 65.



The one-yard AM automatic dragline is one of 33 models in the new "A" series introduced by the Page Engineering Co.

New automatic draglines feature reduced weight

■ A new line of lower cost "A" series Page automatic dragline buckets with capacities of from ½ to 3 cubic yards has been introduced by the Page Engineering Co. The new line is said to be lighter in weight but with the same rugged construction and automatic digging action of the "R" series.

Among the features of the "A" series are a heavier one-piece bottom plate, an improved lip, a two-position hitchplate, a smooth-action dump block, flared sides, a forward arch, reversible tooth points, and heat-treated alloy-steel hoist and load chains.

The "A" series automatics are available in light-medium, general purpose, and heavy-duty classes. There are 33 models in the line.

For further information write to the Page Engineering Co., Clearing Post Office, Chicago 38, Ill., or use the Request Card at page 18. Circle No. 143.

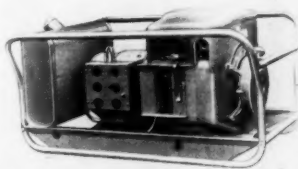
Portable DC generator delivers 5,000 watts

■ A new lightweight, portable 5,000-watt 115-volt dc electric generating plant is announced by D. W. Onan & Sons, Inc. The self-contained plant is recommended for operating lights, electric tools, and universal motors.

Power for the generator is supplied by a two-cylinder opposed four-cycle air-cooled Model CCK gasoline engine. The engine is rated at 12.9 horsepower. The generator is directly connected to the engine for permanent alignment. Of drip-proof design, it weighs 315 pounds.

Standard equipment for the Model 5CCK-115P includes a six-outlet receptacle box with pilot lights, a mounted six-gallon fuel tank, vibration dampeners, a Readi-Pull starter, and a carrying cradle.

For further information write to D. W. Onan & Sons, Inc., 2515 University Ave. S. E., Minneapolis 14, Minn., or use the Request Card at page 18. Circle No. 40.



The Onan Model 5CCK-115P gasoline-engine generator is rated at 5,000 watts, 115 volts dc.

HD-16*

150 net engine hp
31,600 lb

Max. drawbar pull, 60,000 lb

*Also available with standard transmission



or per man-hour... at lower cost

No construction equipment dealer in your area knows

torque converter tractors as well as your Allis-Chalmers dealer. See him... and get the benefits of 17 years' experience working for you. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

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Longer life for big equipment—Hydraulic torque converter cushioning reduces shock and vibration on the power train, the entire tractor and its auxiliary equipment—mounted or drawn. That means less downtime, more production time... better profit protection on any job!

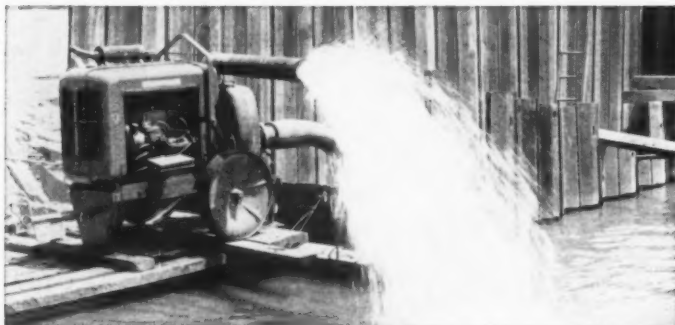
For more facts, use Reader-Reply Card opposite page 18 and circle No. 294

This is the second in a series of seven feature articles, each complete in itself, on various aspects of roadbuilding. The articles were written specially for the ROAD SHOW DAILY, published by CONTRACTORS AND ENGINEERS magazine during the 1957 Road Show. They are being reprinted here, by request, for those who missed the Road Show. Each of the articles was written by a key figure in the roadbuilding industry.

Rock drilling in roadbuilding

Progress does not stop with bigger, more powerful rigs; limits still to be overcome on existing drills, compressors

Jaeger offers new pumps and higher performance for '57 work



1720 GPM AT ONLY 1400 RPM WITH DIESEL-POWERED 6" PUMP . . . THAT'S ACTUAL PERFORMANCE

With high water, an unstable gravel river bottom and a good sized cofferdam, you do a lot of pumping. This 6" Jaeger "Sure Prime" is the only contractors' pump built that will move well over 100,000 gallons per hour with a 36 hp diesel engine at a fuel-

saving diesel speed of only 1400 rpm. Higher capacities, at lower, engine-saving operating speeds, are characteristic of Jaeger "Sure Prime" centrifugals in all sizes, 1½" to 10". Base your 1957 pump buying on 1957 information. Ask your Jaeger distributor, or write today, for the guaranteed actual performance of 1957 model Jaeger pumps in the sizes your work requires.



NEW DIAPHRAGM PUMP HAS SPRING-BOTTOM BOWL

Revolutionary spring-bottom construction of Jaeger "DY" model diaphragm pumps prevents build-up of cement or clay deposits and also protects from shock if stones are sucked into pump. Light weight, free-swinging valves minimize resistance and give quick,

tight closure for high vacuum pumping (4" model handles 4000 gph at 25' suction lift, up to 7000 gph at 10' lift). Surge chamber eliminates "kick", doubles hose life. Merely loosen 4 bolts and tilt frame back to change diaphragm. Built in 3" and 4" models that make other diaphragm pumps old fashioned.

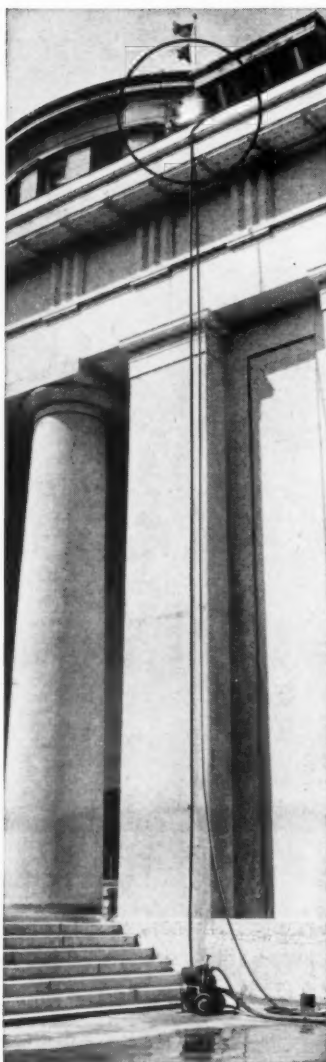
See your Jaeger distributor or write for latest catalog and performance data on Jaeger Sure Prime Dewatering Pumps, Diaphragm Pumps, Pressure Pumps or Well Point Systems.

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VERTICAL HEAD IS 143'; PUMP IS A 2" JAEGER "SURE PRIME". The dual-purpose model 2PAFH gives you high pressure plus sizeable capacity. On this sand-blast cleaning job, Midair Construction Co., Akron, Ohio, used it to pump wash-down water to the dome of the Ohio Statehouse, 143' above pump location. On supply work it will deliver 65 gpm at 60 lbs. pressure; on drainage jobs it will move 140 gpm (8400 gph) at 10' suction lift.

The importance of modern rock-drilling equipment to highway construction can best be illustrated by considering a few early highways.

In construction of the earliest road systems, rock excavation was unknown. The Chinese, and later the Greeks and Persians, simply routed their roads around obstacles. The Egyptians, using wooden mallets and stone hammers against chisels of copper, bronze, and iron, succeeded in laying the first roadbeds. Later, the Romans employed pickaxes quite similar to our own in building a road system which has lasted for almost two thousand years.

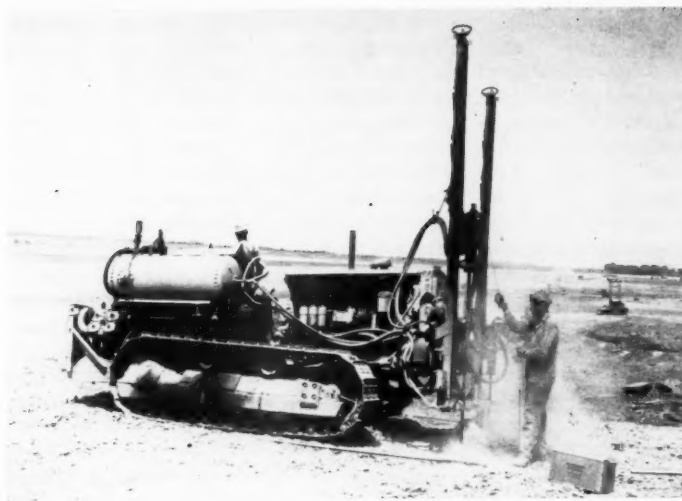
But the routing of roads in a direct, efficient manner remained a problem up until the later part of the nineteenth century. It was not until the development of early rock-drilling equipment, coupled with the invention of nitroglycerin in 1846, that large-scale excavation and cut-and-fill construction made modern highways possible.

These turn-of-the-century highways do not, of course, compare very favorably with highways of today. While constructors of that time were able to use the new drills for excavation and, consequently, route their roads in reasonably straight lines, their efforts seem incredibly slow to us now. As late as 1933, all drilling for cuts was accomplished either with hand-held jackhammers or tripod-mounted drills. Twenty-five years ago, good production in average rock was on the order of 60 yards per shift per machine. Today a quarry-type rig using a down-the-hole drill with a 4-inch bore and 7-inch bit can produce 2,500 cubic yards per shift per machine.

The mechanical rock drill is strictly an American conception. We can find no outstanding designs or improvements that originated in any other country, and drills made elsewhere, even now, are largely copies of American machines. The first American rock-drill designers recognized that the most natural and effective way to drill a hole in rock is to strike a steel chisel or drill bit with a hammer. In their early mechanical developments, however, they were forced to retreat to a construction where the entire drilling element was tied to the piston

CONTRACTORS AND ENGINEERS

This heavy-duty drill, tractor-mounted, has its air supply right at hand. The tractor carries a compressor to supply air to the drill.



by J. A. WIENDL,
Ingersoll-Rand Co.

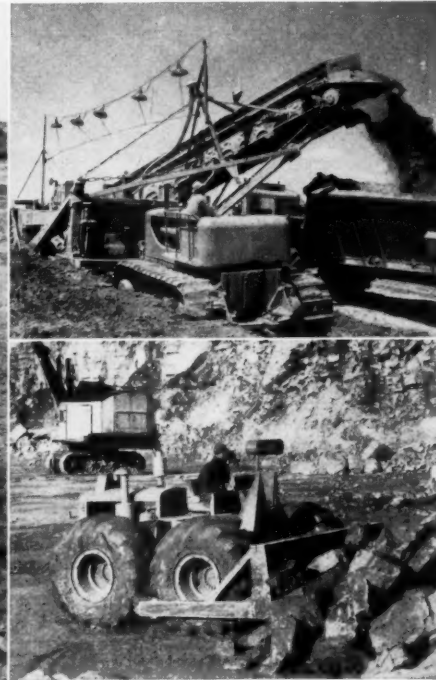
and reciprocated back and forth with it. It took nearly 50 years to devise a method for divorcing the two elements and work back to the original hammer principle used in hand drilling.

Early tripod mounting

Early drill designers such as Singer, Couch, Fowle, and Burleigh devised drills in which drill steel and piston were combined. The Burleigh drill, in particular, was much used by early hard-rock men, and the air compressor that Burleigh built in 1866 was the first large one of practical value to originate in the United States. In 1871, Simon Ingersoll obtained patents on a rock drill and a universal tripod mounting. His drill was based on the Fowle-Burleigh construction and incorporated the better features of those machines. The tripod support, held steady by leg weights, was the first convenient rig for drilling holes at any angle from vertical to horizontal and was widely used for 40 years thereafter. The drill was redesigned and marketed as the Ingersoll Eclipse, which some rock-drill men still remember.

By 1874, the infant rock-drill industry was getting a good start, and its products were in considerable demand. But it should be remembered that drill steel and piston were still combined in these machines. To John George Leyner goes the credit for first successfully applying the hammer principle to drills for horizontal and down-hole work. The secret of his success was the idea of passing air and water through hollow drill steel to clean the hole. This sounds simple now, but Leyner really faced an almost insurmountable obstacle because no way of rolling hollow steel was then known. Leyner's first "steels" were pieces of hollow staybolt iron with bits and shanks welded on their ends. The iron mid-section of the composite drill rod was naturally inferior to steel; in addition, the hole weakened the piece and increased the likelihood of its failure in service. As a matter of fact, the drill steel problem is still a major one in the industry. As the hitting power of drills is continually increased, the difficulties of finding a steel that will withstand

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(Continued from preceding page)

the hammering effect and rotational strain grow ever greater. Even the recent development of austenitic cored alloy steel leaves us still seeking something better.

Leyner obtained a patent on his principle, which has often been called the greatest single feature ever contributed to the advancement of rock-drill design. In addition to the all-important hammering principle and the use of hollow drill steel, Leyner's drill introduced such improvements as automatic rifle-bar rotation for the drill-steel chuck, automatic lubrication, and enclosed throttle control. His inventions increased the speed of drilling action from 300 or 400 blows per minute to 1,600 or 1,800.

Following the expiration in 1914 of the Leyner patents, which had been purchased by Ingersoll-Rand Co. in 1912, all the manufacturers started to produce machines of the hammer type and to utilize the Leyner principle. During the intervening 42 years, many improvements have been developed in automatic feeds, steel centralizers, sliding cones, bits, and general drill construction. Many of these improvements are directly related to the construction industry.

Wagon drills

In 1933, for example, the first modern wagon drill was built. A heavy 4-inch bore drifter using a 100-psi air pressure, it was suitable for drilling holes 2 to 2½ inches in diameter to practical production depths of 24 feet.

The drifter drill, mounted on a rigid one-piece tubular steel frame, was capable of full rotation and was adaptable to steep-angle toe-hole drilling, drilling close to face rock, and all positions between vertical and horizontal. The hoisting mechanism for raising and lowering the yoke consisted of a worm and pinion gear actuated by a ratchet handle. Two adjustable legs permitted the carriage to be firmly anchored on sloping or uneven ground to prevent creep, and the front wheel axles were swivel-mounted to enable them to turn and lock at right angles for drilling on hillsides or close to walls.

The wagon drill eliminated complete dependence upon hand-held jackhammers and tripod-mounted drills, used until that time even for

the deepest holes. In 1945, to increase speed and reduce some preliminary work, a hammer mounted on a light wagon mount and designed for one-man drilling of holes in the 1½ to 2-inch range, was introduced. The elimination of hand-holding the drill for pioneering work reduced operator fatigue and assured continuous correct feeding pressure on the drill bit. The tower permitted smooth feed for drill changes up to 6 feet, and the new rig, like the wagon drill, could drill in any direction with equal ease. Positive feed was obtained by means of an air motor which actuated a self-locking worm gear. This kept the drill from jumping forward in soft spots and avoided binding and rapid bit wear. The power of the feed motor was utilized to raise or lower the light frame from toe-hole position to maximum height. The frame could be locked in any position by tightening

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The completely new Forward Control 'Jeep' FC-150—the first time a 4-wheel-drive Truck has so effectively combined maximum cargo capacity with exceptional maneuverability! New Forward Control design puts a 74" pickup box on an 81" wheelbase. And the FC-150 retains famous 'Jeep' ruggedness and versatility.



New maneuverability!

It's the world's shortest turning 4-wheel-drive Truck! For safer off-road maneuverability, it gives you up to 200% greater forward visibility. Powered by the engine that made 'Jeep' vehicles famous, the new FC-150 provides the extra traction of 4-wheel drive for off-road travel, shifts into 2-wheel drive for highway travel.



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The new look and feel of tomorrow! The FC-150's Safety-View Cab combines beauty with utility. Its new wrap-around windshield is the largest in the 5,000 GVW class. There's plenty of extra leg and head room. Here is new styling, comfort, convenience and safety all in today's most advanced 4-wheel-drive Truck.



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This heavy-duty quarry-type unit drills through 70 feet of rock.

one nut on the end of the crossbar.

In 1948, an entirely new drilling machine made its appearance on a highway construction project. In the spring of that year a Poughkeepsie, N. Y., contractor used a giant quarry-type drill for the first time in highway construction while building part of Route 9W in New York. This was the first highway construction to use a large blast-hole drill. The drill used on this project had a 6½-inch bore and 10-inch stroke, and employed 5½-inch detachable steel bits of the churn drill type. The piston drill was driven by a 500-cfm compressor, diesel driven, with 100-pound discharge.

To understand the departure this larger rig made from previous drills, it is necessary to go back to the period before World War II. Shortly before the war began, and again after we entered it, the government issued urgent requests for a larger and better submarine drill than was available in order to speed up the Panama Canal construction and maintenance program. The industry had gone the limit with steam drills of the type that had been generally accepted up to that time. Engineers felt that further improvement rested on the possibilities of designing an air-operated machine for this service.

The problem involved in producing a successful air drill of the size and characteristics required was to make

CONTRACTORS AND ENGINEERS

it efficient enough to permit holding the necessary air-compressor plant within allowable size limits. The operating principles of an air-drill are altogether different from those of a steam drill, where both ends of the cylinder are alternately charged with live steam and emptied to atmosphere during each cycle. Conversion of the old steam drill to air operation would have required a prohibitive volume of air for a machine of the size needed, even though it could have been made to work.

With the knowledge they had by that time acquired concerning valve performance and actions taking place within the cylinder of a rock drill, Morrison and Bennett developed a machine that met the requirements of the Canal authorities. It was patented in July, 1941. When the construction of the third set of Panama Canal locks was discontinued, a number of these large drills were in service.

Blast-hole drills

After the war was over, the same principles were applied to a dry-land drill to fill the long-existing need of a better drill for large blast-hole drilling. The industries concerned had requested a machine that would drill faster, have better feed control and automatically controlled rotation to produce a chipping or cutting action rather than the crushing effect of existing churn drills, and most important of all, include means of cleaning the hole continuously and automatically during the drilling operation.

These features were all incorporated in the big air-operated quarry-type drill mentioned above. As used initially, it consisted of an air plant, tower, and all accessories on a power-propelled, crawler-mounted chassis. It employed a piston-type drill that

40-foot length unless a radical change in rock condition was encountered.

Hole cleaning was automatic and continuous. Exhaust air from the drill was passed down through the hollow drill steel, forcing the cuttings to the surface in the annular space between the drill rod and the hole. The cuttings were then collected at the surface by an attached dust collector equipped with large storage hoppers, making the cuttings available as stemming material when the hole was charged.

The location of the drill and tower in front of the cab, tracks, and compressor units gave the machine out-

in-front drilling characteristics that permitted drilling close to the edge or face of a bank. Three hydraulic leveling jacks, working independently, quickly leveled up the machine on rough terrain. An air-driven utility hoist was mounted on the left side of the tower for handling drill steel and other odd hoisting jobs.

In 1949, the first such big drill to utilize a dual compressor unit, employing discharge pressures of 130 psi, was used by A. I. Savin Construction Co., Hartford, Conn., in building the New Hampshire Turnpike. The Savin rig was equipped with two air-cooled, two-stage, heavy-duty air compres-

sors, diesel driven. Compressor features included aluminum low-pressure pistons, free-air unloading, large capacity oil filters, and force-feed lubrication to vital parts.

In 1954, on construction of the New York State Thruway, George H. Brewster Co., Bogota, N. J., used two such rigs with dual compressors, but utilizing a heavier piston drill, obsolescing previous equipment. The Brewster drill had an 8-inch bore by 11-inch stroke and drove a 6-inch bit.

No discussion of rock-drill development would be complete without the mention of detachable drill bits, and



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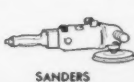


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A crawler-mounted rock drill used for heavier drilling jobs.

struck 200 blows per minute and was capable of driving holes up to 75 feet deep in the hardest types of rock. Automatic rotation, using time-proven pawl and ratchet design, turned the bit to a fresh cutting position for each blow.

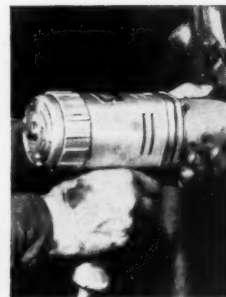
Feed of the rig was a full and uninterrupted 40 feet from top to bottom of tower. Feeding was accomplished with a 5-cylinder air motor; once regulated to suit drilling conditions, the feed was automatic for the full

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REVERSIBLE! Full power in either direction. Reversing ring design prevents accidental starting.



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in particular the carset jackbit, with which the Savin and Brewster drills were equipped. Back in 1919, Arthur L. Hawkesworth patented the first detachable drill bit to be used on an extensive scale, and the concept of integral drill steel-and-bit construction became outmoded. Hawkesworth's bit was retained on the drill rod by a dovetail slot. In 1925, Fred W. Thurston devised a detachable bit secured to the rod by means of a threaded sleeve connection. During



This tractor mounts both a heavy-duty drill and a compressor.

the early '30's, when detachable steel bits were making their universal debut, a radically new development made its appearance in Germany—the use of tungsten-carbide tips inserted in the cutting edges of the bit.

After World War II, Ingersoll-Rand Co. renewed a research program, which it had been forced to discontinue during the war years, and collaborated with the Carboloy Co. in the development of a tungsten-carbide insert bit suitable for general use with American design rock drills operating with the prevalent air pressures. The result, in 1947, was the carset jackbit, a threaded-sleeve alloy steel bit with four large tungsten-carbide inserts arranged in an X design. The design eliminated the tendency of a hole to "rifle", a problem with ordinary bits. The carset jackbit has increased drilling speed and production to such an extent that it has sparked a competitive race with the industry to realize further design improvements.

Recent developments

In 1951 a rotary drill, using a tri-cone bit and compressed air to clean the hole, was used for the first time by John Arborio, Inc., to construct Highway 9W in New York. The oil industry had long employed rotary drills, with mud or water to cool the bits and remove cuttings. This method however, when used with blast holes, had only limited success until compressed air was employed to cool the bits and clean the holes. Introduced by a quarry operator, the principle was developed further by sundry rotary drill manufacturers. This was followed in 1954 by use of the big quarry-type drill with rotary head and tri-cone bits 6¾ inches in diameter by The Lane Construction Corp., Meriden, Conn., on construction of the New York State Thruway

at Batavia, N. Y. This machine was interchangeable, in that it could employ a piston drill or a rotary drill on the same mounting. Time of change-over was only a few hours. Twin multivane air motors of the same design as those used in heavy-duty diesel-engine starting service were used to transmit power to the reversible drilling unit, which drilled to any practicable blast hole depth.

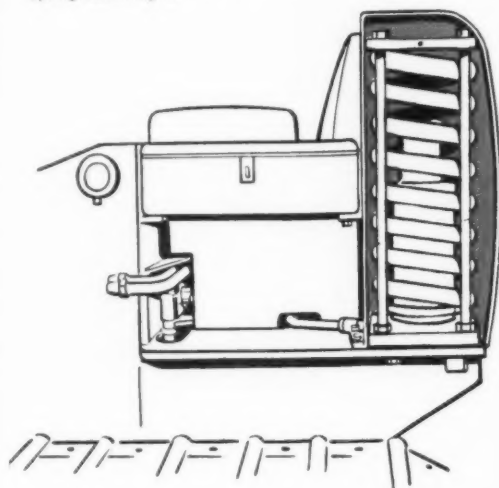
In 1953, the first boom-mounted drills on tractors were used for highway construction by C. J. Langenfelder & Son, Inc., Baltimore, Md., on construction of the New York State Thruway, the northeast extension of

the New York State Thruway, and the northeast extension of the Pennsylvania Turnpike. Consisting of two or more drifters mounted on a compressor-equipped tractor, the new design greatly increased production over the conventional wagon drill. Manual labor, formerly associated with moving drills and compressors, was eliminated. The multiple drifters, remotely controlled, could be spotted quicker and more accurately, resulting in better hole spacing and direction control. One twin boom-mounted tractor unit and compressor could actually do work that formerly required three wagon drills. The booms were moved

through vertical and horizontal rotation by large double-acting swing and lift cylinders mounted at the base of the unit.

In 1954, the first self-propelled wagon drill was developed. Mounted on air-driven crawlers, it eliminated the need for pushing the units or hooking them to other equipment. Holes were still in the 2 to 2½-inch range, using conventional 4-inch bore wagon drill drifters. Late in the same year, one of the equipment manufacturers developed on this principle a 4½-inch drifter which incorporated reversible rotation features and used sectional drill rods, the whole unit

Exclusive Hydro-Spring reduces the effects of shock forces by an actual 67%, or more. Only International Drott gives you Hydro-Spring advantages.



How patented Hydro-Spring increases equipment life and capacity

Exclusive International Drott Hydro-Spring is a hydraulic cylinder enclosed in a heavy-duty locomotive-type coil spring. Shock force displaces oil from main lift cylinders into the Hydro-Spring cylinder—extending it and compressing the big spring to absorb and cushion impact loads.

Owners declare that Hydro-Spring adds a whopping 25% to loader and tractor life—besides reducing downtime and boosting production!

Try Hydro-Spring, turned on and off, to prove a vital money-making difference between International Drott and unprotected front-end loaders! Measure the job-getting, yard-adding advantages of exclusive triple-power, pry-action break-out and other International Drott exclusives. And see how you can beat a fleet of limited-duty rigs with an exclusive Four-In-One. See your International Drott Construction Equipment Distributor for a demonstration.

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin



INTERNATIONAL
DROTT

HOW CAPACITY ADDS
... shock-sw
stops hose-bursting, frame



When you're semi-skidding heavy bucket-loads of material over rough terrain, and the skid-shoes contact a high spot abruptly, linkage isn't pounded—and your spine isn't mauled! Shock-swallowing Hydro-Spring takes over. No pain—no strain!



mounted on crawlers.

These improvements were followed the same year by a revolutionary drilling machine development which introduced the down-the-hole drill, in which the drill actually followed the steel into the hole. Self-contained and self-propelled, the machine employed three separate methods of drilling: down-the-hole drilling for deep blast holes 6 to 6½ inches in diameter, heavy-duty hammer drilling for 4-inch holes, or rotary drilling for hole sizes up to 6¼ inches.

Independent rotation was used in all three methods of operation. No percussive energy was lost in rotating

the bit, as had previously been the case, since the rotary motion was applied to the bit independently by a rotary head.

Down-the-hole drill

In the down-the-hole drill, the rotary head was mounted on the tower as on conventional rotary drills. The down-the-hole drill followed the bit into the hole, receiving its operating air through the hollow drill rod. The bit diameter being larger than the drill diameter enabled the drill to follow the bit down the hole. The bit was held in the drill by means of a retaining ring which permitted re-

stricted bit movement in and out of the front-head. The full power of the drill was thus transferred to the bit. The heavy drill piston struck the bit shank directly at approximately 1,000 blows per minute, actuated by air being directed alternately to its front and rear areas as in conventional hammer drills.

Continuous hole cleaning was accomplished by directing high pressure air through the drill and bit. Additional supplementing hole cleaning air came from the drill exhaust. The drill backhead was provided with wear pads or renewable hard-surface reamers to enable the drill to ream its

way out of bad holes. A standard 3½-inch API thread on the drill backhead permitted the drill to be connected directly to the drill rod.

The new down-the-hole drill has been used in highway construction in three ways since its introduction: as a straight crawler-mounted assembly; as a tractor unit; or as a truck unit on wheels. It has been used both with the down-the-hole drill feature, with a large-bore piston drill mounted below the rotary head, and with the rotary drill alone. In each case the independent rotation of the bit is provided by the rotary head, a high-powered vane-type air motor, reduction and drive gear chain, and a floating spindle. Hole depths for the down-the-hole drill are on the order of 125 feet; the rotary drill with roller cone bits penetrates to all practicable blast hole depths.

Allied with the improvements in rock drill design have been continuous refinements in compression equipment. Beginning with Burleigh's first crude unit and continuing to the present time, compressors—their design, pressure, capacity, and strength—have played an important part in the development of rock drilling equipment. In 1933, the first two-stage air-cooled portable compressor, of reciprocating type, was introduced. In 1951, it was followed by a two-stage sliding vane rotary compressor which overcame many of the limitations of reciprocating units. Smaller and lighter than reciprocating units of comparative size, it eliminated valves and clutch and combined engine control with variable intake inloading of the compressor to eliminate "all-on, all-off" regulation. Modern compressors have been designed in wide ranges of portable and integral sizes to enable contractors to utilize the most efficient sizes for particular jobs.

Today, there are as many types and sizes of rock drilling equipment as there are drilling jobs. Hand-held jackhammers, for example, still receive wide service. While they are not employed in major production drilling, they are used extensively in pioneering work, for block-holing, and where holes in the 2 to 8-foot range are desired. They are often driven by portable compressors, ranging in size from 80 cfm, which will operate one utility jack, to diesel-driven 900-cfm compressors which will drive many hammers or 2 or 3 wagon drills.

Wagon drills are used in rougher terrain to depths normally not to exceed 12 to 15 feet and on small volume jobs. Wagon drills attain production depths of 15 to 20 feet, and a portable wagon drill with 4½-inch drifter can drill 30 to 40 feet on production jobs with hole sizes not in excess of 3½ inches.

The big quarry-type units equipped with piston drills attain depths of 75 feet in production drilling, and the latest rigs with the down-the-hole drillings feature reach 75 to 100 feet.

While the development of these units, with their interchangeable drills and powerful compressors, is an indication of the progress that has been made so far, it should not be thought that the end of the line has

ADDING,

Shock-swallowing Hydro-Spring

g, frame-mauling, spine-smacking impact!



When you solidly set the Skid-Shovel or Four-In-One in tough material to apply famous bucket-heaping, pry-action break-out, you don't punish the equipment, or yourself. Shock-swallowing Hydro-Spring takes over—intercepts "slam-bang" bumps!

When you're using the Four-In-One in dozer position and plow into tough material like this hard-frozen soil, you don't overload hose connections with a tooth-jarring crash. Shock-swallowing Hydro-Spring "gentles" trouble-causing forces by two-thirds, or more.

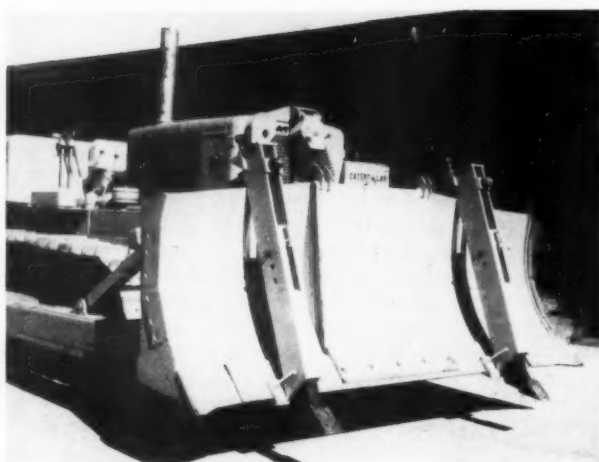
When you dump a bucketful of rock in one sudden clatter, don't brace for a bump, or expect something to break loose. Shock-swallowing Hydro-Spring cushions impact, thus cuts time loss, and practically eliminates hydraulic hose failures.



been reached. If the industry is to keep pace with expanding drilling requirements, the limitations of existing equipment must continually be overcome.

As an example, the most recent piece of drilling equipment, introduced only a few months ago, was a large quarry-type drill with a dual compressor plant using rotary compression, 100-pound discharge. It was equipped with a down-the-hole drill with 4-inch bore driving a 7-inch carset bit, and is suitable for any practical blast hole depth. The first production models of this unit are now in the field. **THE END**

West Germany will add 900 miles to its superhighway system over a 10-year period at a \$1,300,000,000 cost.



The new Ransome Model R-89 ripper has a 4 x 7-inch ripping shank with a 28-pound cast manganese tooth.

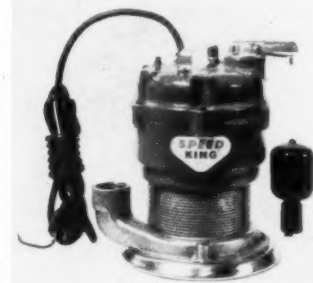
Ripper rack and pinion adjustable by one man

■ A ripper attachment for bulldozers 43 to 60 inches high in the 150 to 320-hp tractor engine range is available from The Ransome Corp. The Model R-89 heavy-duty ripper features a one-man rack and pinion depth adjustment. The attachment has a 4x7-inch ripping shank with a new 28-pound cast manganese tooth.

For further information write to The Ransome Corp., 2729 Hunting Park Ave., Philadelphia 29, Pa., or use the Request Card at page 18. Circle No. 49.

Compact submersible pump powered by 1½-hp motor

■ A multi-purpose 35-pound submersible electric pump capable of handling 3,300 gph at a 5-foot head is available from the Speed King Mfg. Co., a division of The Jaeger Machine Co. The unit is 11 inches wide and 11 inches high.



The Speed King 35-pound submersible electric pump can handle 3,300 gph at a 5-foot head. It is powered by a 1½-hp single-phase electric motor.

Power is supplied by a 1½-hp single-phase electric motor which is hermetically sealed to assure trouble-free operation when completely submerged. The pump is said to be corrosion resistant, even in salt water.

A float switch is standard equipment for automatic operation. A built-in thermal overload protector cuts off the power if the motor overheats for any reason and restarts the motor automatically when it has cooled sufficiently.

For further information write to the Speed King Mfg. Co., 550 W. Spring St., Columbus 16, Ohio, or use the Request Card at page 18. Circle No. 10.

Blaw-Knox appoints

Bruce Alexander has been named technical service manager for the Washington, D. C., office of Blaw-Knox Co., Pittsburgh, Pa. Alexander succeeds Marvin Marcus, who resigned to start a consulting engineering firm.

CONTRACTORS AND ENGINEERS

SAVE MAN HOURS WITH THE MOBILE TRUCK MOUNTED

Chief BACKHOE

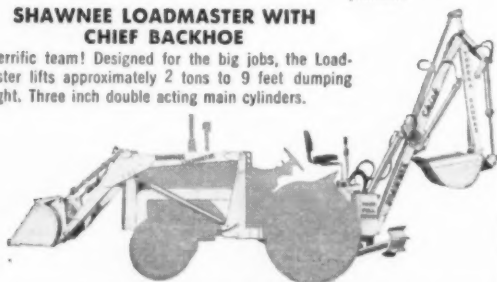
- Digs 14'-15' Deep • Exclusive "Push-Pull" Power
- Sold as a Complete Unit or Mounted on Your Truck • Also Available with Warrior Backhoe.



Biggest of the backhoes. "Push-Pull" cylinders operate synchronously — provide tremendous digging force. Three 120° quadrants of operation, adjustable from operator's position.

SHAWNEE LOADMASTER WITH CHIEF BACKHOE

A terrific team! Designed for the big jobs, the Loadmaster lifts approximately 2 tons to 9 feet dumping height. Three inch double acting main cylinders.



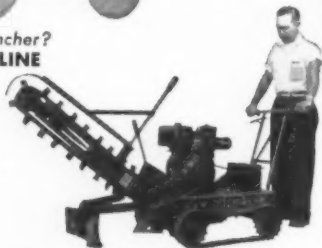
SHAWNEE SPECIAL HEAVY-DUTY LOADER with WARRIOR BACKHOE

Ideal companion to the Warrior — a slightly smaller version of the Chief — the Special lifts 2000 lbs. to 9 ft. dumping height. Two-pin mounting enables removing or mounting on tractor in 5 minutes.



Need a Small Line Trencher? SHAWNEE DITCH-A-LINE

Digs 20" deep — 2" or 3" wide. Six horsepower engine — crawler tracks. Designed to operate in all types of soil ranging from hard-packed California to Florida coral. Hydraulically driven — reversible.



For Additional Information, write AD 592

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MANUFACTURING COMPANY, INC.

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For more facts, circle No. 300

Cool off, Mister!

with ARCTIC BOY portable water coolers

- Built to take abuse on construction jobs, in mines, oil fields, service trucks.
- Hot-dipped galvanized inset.
- Large top opening, easy to ice, clean and fill.
- Write for further information... distributorships available.



THE SCHLUETER MFG. CO., ST. LOUIS 7, MO.

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For Efficient Consolidation Soil Testing You Need...

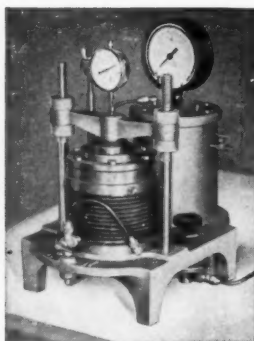
an OLSEN Conbel

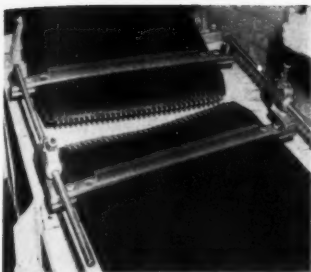
- Infinite choice of loads up to 10 tons per square foot on 2½" dia. sample
- Floating bellows—eliminates eccentric loading
- Instantaneous load application
- Compact—less than 1½ sq. ft. of table space
- Simplified controls—one man operation
- Light weight—portable

For information about the Conbel and other soil testing equipment in the Olsen line, write for Bulletin 50.

TINIUS OLSEN TESTING MACHINE CO.

For more facts, circle No. 302





The Far-Pul belt clamp device uses jacks instead of take-up screws to join the ends of conveyor belts in perfect alignment.

Device cuts down time for belt installation

■ What is reported to be a fast, easy method of installing conveyor belts is possible with a new device manufactured by the Flexible Steel Lacing Co. The Far-Pul employs fast-acting jacks in place of take-up screws and is said to cut down time on belt installations.

Each end of the belt to be joined is secured between bar clamps, one set of which is equipped with jacks and tensioning rods. The tensioning rods are slipped over studs on the opposite set of bar clamps. The jacks are used to draw the ends of the belt together. When the fasteners mesh properly, a pin is inserted through the loops of the lacing or fasteners. The Far-Pul belt clamps can then be removed.

The belt clamp device is operated by one man with a wrench as his only tool. It pulls to a fraction of an inch and keeps the belts in perfect alignment, the company states. The device can also be used to shorten a conveyor belt joined by Flexco fasteners.

For further information write to the Flexible Steel Lacing Co., 4607 Lexington St., Chicago 44, Ill., or use the Request Card at page 18. Circle No. 108.

Portable power tools

■ Pet portable power tools are detailed in a catalog from Portable Electric Tools, Inc. The catalog covers ¼ and ½-inch drills, 5½ and 6½-inch electric saws, impact wrenches, sanders, and grinders. Also included are ¼ and ½-inch drill kits. Each model in the Pet line is pictured and described. Principal specifications are also given.

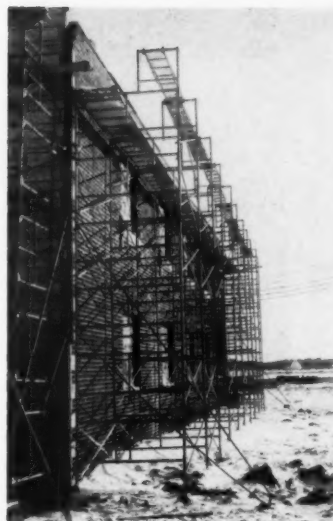
To obtain Catalog P-2 write to Portable Electric Tools, Inc., 320 W. 83rd St., Chicago 19, Ill., or use the Request Card at page 18. Circle No. 87.

Hard-facing wires

■ A new edition of a folder describing hard-facing wires for semi-automatic application is available from the Stoodly Co. The folder contains data on welding characteristics, suggested uses of the 11 wires listed, and general information on the semi-automatic process.

To obtain this folder write to the Stoodly Co., 11936 E. Slauson Ave., Whittier, Calif., or use the Request Card that is bound in at page 18. Circle No. 29.

BESIDES GIVING WORKMEN SURER FOOTING THAN IS AFFORDED BY PLANKING, catwalks on stages of expanded metal offer the advantages of no periodic replacement and free drop-through of mortar and other materials, assuring an obstacle-free surface. On the office building project shown, 24-inch-wide metal catwalks were used to hold the masonry materials. The stages are made in lengths to match the spacing between the scaffold end frames. They are designed to permit continuous walkways at any horizontal-member level, the company reports. For more details write to Bil-Jax, Inc., Archbald, Ohio, or use the Request Card at page 18. Circle No. 33.



SEE *Sasgen* FOR CONTRACTORS' DERRICKS • HOISTS • WINCHES



- Easily rigged on the job
- Conservatively rated for safety
- Simple in design, easily maintained.

ROOFERS' CIRCLE SWING DERRICKS
360° operation. 500 to 2500 lb. capacities. Optional type of power. Champion electric shown.

CONTRACTORS' HOISTS
Single or double drum types with capacities from 500 to 5500 lb. single line pull. Optional type of power.



Hand-Powered WINCHES

Safe worm or spur gear design. Sizes for 400 to 40,000 lb. load. No. 110 shown.



Write for latest catalog.

Sasgen DERRICK COMPANY
3127 GRAND AVENUE CHICAGO 22, ILLINOIS

For more facts, circle No. 303

SAVE THOUSANDS! UNUSED 6x6 ARMY TRUCKS

*2½-TON, GMC & INTERNATIONAL



- From Government Storage!
- Factory-New Condition!
- Unused and Guaranteed!
- Reconditioned trucks also available!

Why invest in expensive new trucks and equipment needed to get the roughest off-road jobs done when you can save up to \$3,000 on ONE truck alone—and get the job done right!

Compare our tandem axle trucks with front wheel drive, 10 forward speeds, overdrive and new mud and snow tires with similar equipment elsewhere. See for yourself how TWO of our trucks cost you even LESS than one new truck!

If planning to buy a truck, get in touch with us right away. There's no obligation... and we deliver on approval!

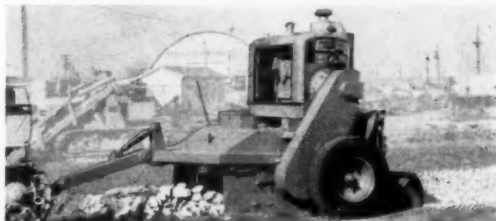
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Construction and automotive equipment and parts
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For more facts, circle No. 304

ROCK BUSTER

THE MIRACLE MACHINE OF THE ROAD-BUILDING INDUSTRY



NO JAWS, ROLLS OR GRIZZLIES

Pulled behind any tractor or grader that will bridge the window, the rock-buster reduces objectionable oversize boulders to money saving base material completely and efficiently in one operation. Also perfect for reconditioning scarified asphalt top material.



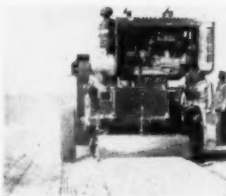
ONE TON HAMMER ASSEMBLY

Eighteen hammers... each weighing 35 lbs.... swing out to a diameter of 38" revolve at 1000 RPM just inches above the ground. The Rock-buster doesn't beat rock into the ground.



PIPELINE CONSTRUCTION

Rock which has been a costly problem can now be reduced in place for use as padding material around pipe as well as leaving a clean right of way where desired.



MANUFACTURED BY

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Browning Manufacturing Co.

111 Humble Ave. San Antonio 6, Texas P. O. Box 2707

See YOUR LOCAL **BMCO** DEALER

For a Demonstration today

For more facts, circle No. 305



A big Cat D9 gets a heaping load into the bowl of a DW21 scraper in a hurry. Both these rigs have turbochargers that increase horsepower as they silence the noise of the engine exhaust.



Allis-Chalmers HD-21 and Cat D9 push tractors help Euclid and Caterpillar DW21 scrapers pick up heaping loads in the borrow pit. Most of the earthwork was borrow, since there was little chance for roadway cuts in this flat area.

Big push tractors speed loading from borrow pits

Big push tractors and scrapers made fast work of loading and hauling nearly a million cubic yards of wet, sandy borrow material for the grading of an 8-mile section of U. S. 66 near Gardner, Ill. This project was a re-alignment carrying the busy highway around several small towns, skirting a number of coal mine workings, and providing for grade separations at a railroad crossing and an intersecting highway.

The new road consists of two 24-foot-wide concrete pavements separated by a 40-foot median which includes the two 6-foot-wide inside

shoulders. The outside shoulders are 10 feet wide with 3 to 1 shoulder slopes and 4 to 1 back slopes. The 10-inch-thick concrete pavements rest on 6 inches of compacted rock base.

The general contractor for the \$2,125,000 project was Arcole-Midwest Corp., Skokie, Ill. The project was designed by the Illinois Division of Highways, and construction was supervised through the Ottawa District office.

This project was in a relatively flat area and, since there was little chance for roadway cuts, most of the material required to build up the



Scottie McBlock takes a leaf from McKissick with his new custom designed Easter outfit

"A BETTER BLOCK"

Custom Designed

BUILT TO FULFILL YOUR EVERY REQUIREMENT



Illustrated right: 250 Ton Twelve Sheave... equalizer Timken Bearing Tandem Block for 26 line reeving.

McKISSICK PRODUCTS CORPORATION
Box 2496 - Tulsa, Oklahoma

Write for complete McKissick Catalog

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MR. ENGINEER . . .

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TODAY'S PAVING PROBLEMS SOLVED WITH MODERN METHODS

CAN YOU USE . . .

BETTER RIDING,
LOWER COST,
FASTER PRODUCED
PAVING?

NO STATIONARY FORMS

The new Method



THE COMPLETE PAVING TRAIN
QUAD-CITY SLIP-FORM PAVER

. . . on a 15 mile primary road section the contractor averaged 2900 lin. ft. per day, 22 ft. wide 6 inch thick slab. The average surface roughness, checked by the engineer was 82" def/mi.

Contractors increase production, and owners pay 15 to 20% less per sq. yd. for slab. Subgrading can be done with power fine-grader on self-propelled crawler-track adaptations.



QUAD-CITY PLANER

Quad-City towed planer weighs 8200 lbs. Can be pulled by mixer or separately on the compacted and graded strips for Slip-form paver, thereby eliminating thin pavement possibility.

WRITE FOR FREE LITERATURE



QUAD-CITY EQUIPMENT CO.
ROCK ISLAND, ILLINOIS



Rigs make fast time on loading, haul, dump, and return cycles; firm completes \$2 million grading and paving job in 11 months

grades was obtained from a series of borrow pits along the right-of-way. Much of this was a wet sandy material that produced very satisfactory fills, but required a lot of power on the loading cycle.

Powerful push tractors

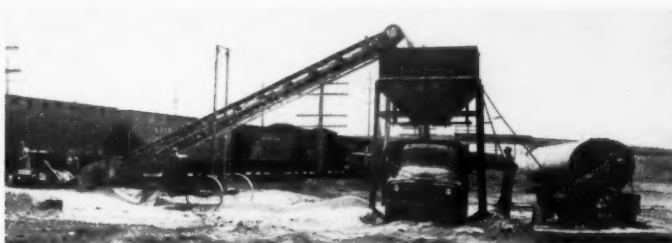
The contractor hauled most of the borrow material with eight Caterpillar DW21 scrapers and five 18-yard Euclid scrapers with four-wheel tractors. These fast, powerful haul units were assisted on the loading cycle by two Caterpillar D9 tractors and two Allis-Chalmers HD-21 tractors. These

machines, split into several spreads, worked from more than one borrow pit at the same time.

Building one of the long approach grades leading to a structure, the rigs were hauling the wet sandy material an average of 1,800 feet from the borrow pit to the fill. On this operation, the scrapers made a round trip in an average time of 6.5 minutes including the loading, haul, dump and return cycles.

The average time required for the D9 pusher to put a heaping load into one of the DW21 scrapers was between 1 and 2 minutes. (Continued on next page)

Though most of the roadway embankment material came from borrow pits, some of it was built up with material from such light ditch cuts as this. The Cat D8 and Cat 463 scraper working this cut also handle finishing and short-haul excavation.



An International truck picks up crushed rock for the base at this unloading setup. An undertrack conveyor carries rock to the Barber-Greene 40-foot conveyor leading to the 20-ton surge hopper. Water from the 3,000-gallon trailer tank is fed to a spraybar in the bin by a small Gorman-Rupp pump.



This man knows concrete and power trowels

S. PATTI CONSTRUCTION CO.
GENERAL CONTRACTORS
1340 ADMIRAL BOULEVARD
KANSAS CITY 6, MISSOURI
January 14, 1957

Gentlemen:

After trying and testing the troweling machines manufactured by six leading companies, we selected the Master Powermatic for our use. We found this machine to be superior due to its ability to finish floors better in a more workable manner. Holidays (cat faces) have been virtually eliminated due to the low center of gravity. The stationary guard ring, dead man control and ease of handling makes this machine the safest we have used. The simplicity of operation does not require any former knowhow or special instruction. Maintenance has been almost unbelievable, we finished over 60,000 sq. FT. of hard trowel concrete with no sign of wear to the blades.

S. PATTI CONSTRUCTION CO.

By *George M. Klossner*
George M. Klossner
Supt. all cement constr.

Here's the letter Mr. George Klossner, Supt. of cement construction, S. Patti Construction Co., Kansas City, Mo., sent his Master distributor.

Those are strong words of praise from a man in Mr. Klossner's position, but he is sold on the Master "Powermatic" because: **Low center of gravity.** The Master "Powermatic" has the lowest center of gravity of any power trowel on the market. It's only 14" from the slab to the top of the Briggs & Stratton engine... and is the most stable, easiest to handle trowel you've ever operated... it hugs the slab from start to finish; doesn't try to run away, tilt or buck. Even new operators do a professional job the first time with a "Powermatic."

Power blade adjustment. This saves many a stoop and sore back. You just pull or push a knob on the handle and engine power automatically adjusts the angle of the blades to float or finish. You get the exact finish wanted. Master's "dead man" control automatically idles the engine when the operator lets go... eliminates wildly swinging handles and other hazards.

Free data sheet. Write for free data sheet or visit your Master distributor today and find out about the "Powermatic" yourself. No obligation, naturally.

MASTER

MASTER VIBRATOR COMPANY
148 Stanley Avenue • Dayton 1, Ohio

For more facts, use Reader-Reply Card opposite page 18 and circle No. 308

MAY, 1957

OWEN

Engineering scores again

Never before have so many important and improved features been combined in a bucket as in the new OWEN "SCL" wide-type materials handling clamshell bucket... redesigned from bowl to head.

OUTSTANDING IS THE 75% TO 100% INCREASE IN CABLE LIFE.

Here's how it's done. The closing line now leads straight through the center plane of the head of the bucket to first lower sheave, thus eliminating bending of the closing line around upper guide sheaves as in conventional block and tackle and lever arm buckets.

Reinforced arms and crosshead afford greater durability without adding weight to bucket. Available in sizes ranging from 3/4 to 3 cubic yards inclusive.

Write today for additional information.

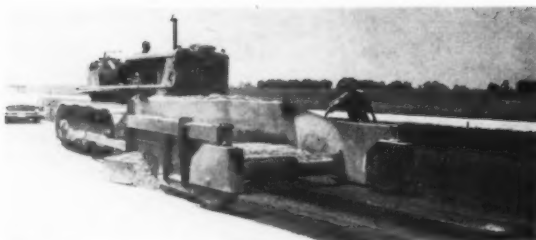
The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO

BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 309



Preparing for the paving operation, the contractor has a crane set up a new Blaw-Knox 165-ton, two-compartment aggregate bin at a rail siding near the mid-point of the job.



A Jersey spreader pushed by a Cat D8 tractor spreads a uniform course of base material over the subgrade. The 6-inch course is put down 26 feet wide for the 24-foot pavement.

(Continued from preceding page)

tween 40 and 45 seconds. As the scraper bowl came up, the big pusher put on a burst of speed to get the scraper out of the pit in the highest possible gear. On the fill, the scrapers unloaded and swung around for the return trip without stopping. The average time for the uphill haul was

less than 4 minutes, and the down-grade return was usually made in less than 2.5 minutes.

This material was moist enough as it came from the borrow pits so that no additional moisture was required to meet the compaction requirements on the fills. In addition to the com-

paction obtained by running the heavy scrapers over the fills, the contractor also used a series of sheepsfoot rollers and disks and one Bros 50-ton compactor.

Of the total of more than a million cubic yards of earthwork in the project, about 180,000 cubic yards were classed as roadway excavation. This included ditch cuts and other minor grading. Since most of this was short-haul material, the contractor used crawler tractors and scrapers. Four Caterpillar D8 tractors pulling Caterpillar No. 463 scrapers moved most of the material.

As the scrapers dumped the material on the fills, it was spread and shaped by Allis-Chalmers HD-21 tractors with Gar Wood dozers. Each lift was dozed out to a maximum of 6 inches in thickness before compaction. Double-drum sheepsfoot rollers were pulled in tandem by Caterpillar D8 or Allis-Chalmers HD-21 tractors. A typical arrangement included two double-drum sheepsfoots in tandem behind the tractor with a Rome disk attached behind the last roller. This combination gave assurance that each lift was being compacted from the bottom up.

Final shaping of the grade was handled by three Caterpillar No. 12 motor graders and one Allis-Chalmers motor grader. These rigs also did an excellent job of maintaining the haul roads between the borrow pits and the fills.

Crushed rock base course

Each roadway of the completed grading section was surfaced with a 6-inch course of crushed rock base 26 feet wide. The crushed rock was delivered to the job area by rail and was unloaded at two points.

At the paving plant location, cranes unloaded the cars using Owen 2-yard clamshell buckets. The cranes loaded the material directly into dump trucks that hauled to the roadway.

The second unloading point at Gardner employed a conveyor system. A Barber-Greene under track conveyor received the crushed rock from the hopper-bottom gondolas and delivered it to a Barber-Greene inclined conveyor. This 40-foot conveyor with an 18-inch belt raised the material to a 20-ton surge bin.

As the rock came off the end of the conveyor, it was moistened by a spray of water from a spraybar mounted at the top of the bin. The water was hauled to the site in a 3,000-gallon tank trailer and was pumped to the spraybar by a small Gorman-Rupp pump.

A fleet of dump trucks was loaded by gravity from the bin, and they

CONTRACTORS AND ENGINEERS

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518F North Hough St., Barrington, Ill.
BARCO VIBRA-TAMP
for Granular Fill and Bituminous Surfacing



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hauled the material to the roadbed. These trucks dumped the rock into the hopper of a Jersey spreader pushed by a Caterpillar D8 tractor. The spreader applied a uniform course of loose material on the grade which was immediately compacted by a pair of Bros 11-wheel, wobble wheel rollers pulled in tandem by an International 600 wheel tractor.

The spread working from the unloading point at Gardner unloaded, placed and compacted an average of 13 or 14 carloads of the base material per 10-hour day.

A final application of about an inch of 3/8-inch rock chips was applied to the base ahead of the concrete paving operations. These chips were rolled with a 10-ton steel-wheel roller.

Concrete paving

For the concrete paving operation, Arcole-Midwest set up a batch plant on a rail siding at the edge of the right-of-way near the mid-point of the job. The plant included a 165-ton two-compartment aggregate bin, a 140-ton sand bin, and a cement plant with a capacity of 1,200 barrels. The all Blaw-Knox plant was equipped with push button controls on the weighing units and a twin batcher on the cement plant.

One paver started the operation, putting in some of the connecting pavements and bridge ramps which helped handle traffic during the rest of the paving operation. Then two pavers were put in operation. Paving started on the south-bound lane at the center of the job and moved to the south end. The north-bound lane was then paved to the north end of the project, and the remaining section of south-bound lane was then done.

The paving train consisted of two Blaw-Knox spreaders, a Blaw-Knox finisher and a Koehring longitudinal float. A Heltzel Flex-Plane finishing machine was utilized on some of the irregular sections where widths tapered from as narrow as 14 feet up to the full 24-foot width of the main pavement.

Personnel

Supervising the project for Arcole-Midwest Corp. was Walter "Ward" Watson. He was assisted by project engineer Carl Johnson and office manager Ed Hill.

District engineer of District 3 of the Illinois Division of Highways with headquarters at Ottawa is John Grayhack, Jr. The district construction engineer is James Martin. Representing the Division of Highways on the project was resident engineer Joseph Marek.

THE END

Richard Siver joins Traffic & Street Sign Co.

The new consulting traffic engineer of Traffic & Street Co., Newark, N. J., is Richard W. Siver. Siver was formerly traffic engineer for the Garden State Parkway in New Jersey.

In his new position, Siver will work with highway departments, authorities, and consulting firms planning modern signs, sign supports, and support structures.

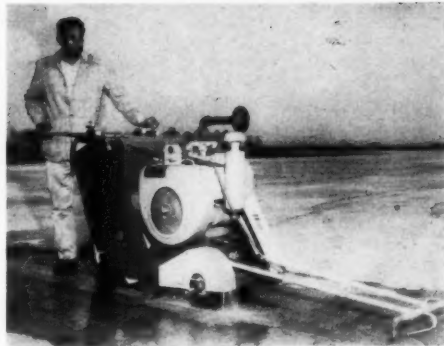
Concrete cutter now has increased spindle power

■ A non-slip high-efficiency timing belt drive has been incorporated into the Models 257 and 367 concrete cutters manufactured by the Felker Mfg. Co. The single belt, equipped with lugs which engage gear-like teeth on the pulleys, transmits power equal to 16 V-type belts of "B" sections.

Freedom from slippage and increased belt efficiency get more horsepower to the spindle with minimum losses on the way. The extra torque and constant rpm mean longer diamond blade life, the company reports, with an increase in footage per blade.

A Vickers variable-speed hydraulic power drive to the rear wheels enables cutting on steep grades without

The Felker Models 257, and 367 concrete cutters now have non-slip high efficiency timing belt drives that transmit extra horsepower to the spindle.



slipping or coasting, the company states, and gives a variable control to 90 fpm. A reverse has been added for backing up under power and for simplified operating in tight areas.

Other improvements include longer

adjustable handles, a pivoted engine mount, and a removable frame insert.

For further information write to the Felker Mfg. Co., 1128 Border Ave., Torrance, Calif., or use the Request Card at page 18. Circle No. 109.

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Lewis & Frisinger Co., General Contractors, Ann Arbor, Michigan, own 8 heavy-duty construction machines that are equipped with Fuller Transmissions that have never had a single transmission overhaul. Some of this equipment has been in active service 11 years.

Says Frank Frisinger, Equipment Superintendent: "Whenever and wherever we can specify the transmission, we specify Fuller. We're completely satisfied with them. I have no worries at all from Fuller Transmis-

sions. They've always stood up under the most severe tests."

This 30-year old firm, one of the largest and oldest general contractors in Michigan, owns and operates a number of heavy-duty scrapers, rear end and bottom dump trucks. The Fuller Transmissions in this equipment range from 5-speed 5-F-1220's and 5-A-920's to 4-speed 4-A-112's. The gear ratios permit . . . selection of speeds best suited to the work at hand . . . smoother shifts . . . better control of loads and put more horse-

power to work more efficiently.

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For more facts, use Reader-Reply card opposite page 18 and circle No. 311



The first International motor truck was a high-wheel "Auto Wagon". Its 20-hp air-cooled engine was of 2-cylinder 4-cycle design with 5-inch stroke and bore.

I-H Motor Truck Division spans 50 productive years

Auto wagons of 1907, featuring 20-horsepower, built by 3-man "production teams"; V-line trucks of 1956 have 257 horsepower ratings for heavy-duty operations

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HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

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In 1907 a high-wheel, 2-cylinder "Auto Wagon" bounced out of a factory onto a road—the Motor Truck Division of the International Harvester Co. was launched. Since that time, the division has produced 2,610,441 motor trucks from pickup models of 4,200 pounds gvw to off-highway haulers rated at 96,000 pounds gvw.

The first International motor trucks were built by "production teams" of two or three men at the company's McCormick Works in Chicago, and later at the Akron, Ohio, works. The production rate for 1907 was 73 Auto Wagons, a little more than 7 per cent of the total U. S. production of 1,000 motor trucks.

Although the units were slow—the instruction booklet warned against speeds over 20 mph—and resembled horse-drawn wagons in appearance, the Auto Wagons fulfilled the design purpose—hauling produce to market.

By 1915, when motor trucks were beginning to emerge as an important factor in the transportation industry, I-H production was switched to a limited "line" of new trucks with increased power and speed.

Six years later, International converted its Springfield, Ohio, plant to motor truck production. It was here that the pneumatic-tire "speed" trucks were designed and built. Production leaped from 7,183 motor trucks in 1920 to a record 39,008 trucks in 1928.

Prewar line of trucks

In 1938 the first International trucks with Metro bodies appeared. These multi-stop retail delivery vehicles were originally built under an exclusive contract with the Metropolitan Body Co., Bridgeport, Conn. The firm is now a wholly-owned subsidiary.

Following the 1930's, when the C and D-lines were produced, the firm introduced its K-line. This line comprised models ranging in size from half-ton pickups to giant 6-wheelers capable of handling the largest cargos then permitted on the highway, and capable of hauling heavy loads over severe off-highway terrain.

In 1944, the Motor Truck Division was formed to handle the growing volume of International truck engineering, production, and sales activities.

CONTRACTORS AND ENGINEERS

The first low-wheel I-H trucks, produced in 1915, offered greater speed and load capacity. This 1½-ton body truck featured radiator behind engine. Thousands of trucks of this type were produced for World War I service.



By contrast, the 1956 V-line dump truck featured V-8 engines in 206, 226, and 257 horsepower ratings. This line was built for heavy-duty operations.



Postwar development

The first postwar line, designated the KB-line, appeared in 1947. Another line of specialized trucks, "Western-type" models, was also introduced. This line was originally designed to conquer the distances and mountainous terrains of the western states and rugged off-highway hauling jobs. Each of these Western-type models is tailor-made to individual specifications for the job it is to perform.

In 1949, the L-line was introduced. This consisted of 87 basic truck chassis ranging from 4,200 to 50,000 pounds gvw; a series of new multi-stop units; and a group of cab-forward units ranging upward from 14,000 pounds gvw.

Three years after the introduction of the L-line, it was supplanted by the R-line that had 168 chassis models in 296 wheelbases.

Another development, in 1952, offered the industry factory-installed liquefied-petroleum gas powered engines.

In 1955, the S-line of light, medium, and heavy-duty trucks was introduced. This line incorporated new design, power, and increased all-round ruggedness and durability. Four and 6-wheel gasoline and LPG powered trucks were offered in a selection of 4,200 to 33,000 gvw.

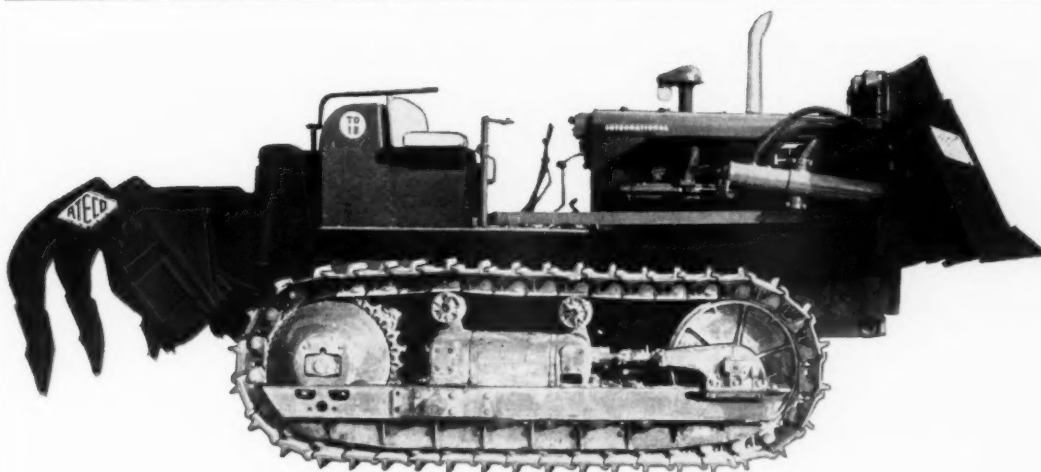
Add 4-wheel-drive

That same year, 4-wheel drive motor trucks were added to the line; and automatic transmissions, power brakes, and power steering were made available.

The following year, V-line trucks were unveiled, featuring V-8 truck-type engines in 206, 226, and 257 horsepower ratings. This line was designed and built for heavy-duty operations.

There are 50 years and billions of motor truck miles between the first unpretentious Auto Wagon and today's V-line trucks. In the past 50 years, 5,000 dealers and company-owned outlets have sprung up throughout the United States. These dealers, plus the affiliate companies, distributors, and dealers in 137 countries are looking forward to double the progress that has been made by International Harvester in the past 50 years.

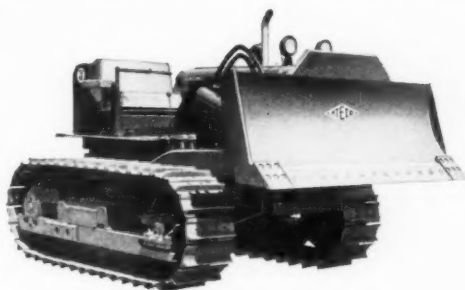
THE END



MATCHED GREENVILLE EQUIPMENT FOR INTERNATIONAL TD-14 AND TD-18

Matched Greenville attachments make an IH TD-14 or TD-18 one of the contractor's most versatile tools. With an inside-mounted 'dozer in front and a ripper

in back, operators rip one pass and 'doze their way back. Weight is evenly distributed . . . increases traction . . . more bite . . . puts full tractor power to use.



Greenville ATECO rock rippers for IH TD-14, TD-18, or TD-24. TD-18 and TD-24 rip as deep as 24". TD-14 to 18"; tractor-mounted; completely hydraulic.



7' 11¾" blade tilts in either direction; no nose diving; dual plate design bowl; extra-heavy push arms; no highway permit required.

INSIDE-MOUNTED 'DOZERS—These 7' 11¾" blades take full advantage of the added horsepower in International Harvester's powerful TD-14 and TD-18 crawler tractors. Push arms, mounted between the tracks, use IH's modern hydraulic system and cylinders to provide trouble-free hydraulic power. Center of draft is always between the tracks. Nose diving is eliminated. You dig and roll big loads with less clutch fighting. Wear and stress on track rails, rollers, and idlers is reduced.

POWERFUL, NEW ROCK RIPPERS—The big Greenville Rock Rippers, mounted on TD-14s or TD-18s, go wherever the tractor goes—always there to tackle hard spots. Points bite in to depths of 24" . . . rip out earth and rock with ease for 'dozing or fast scraper loading. Shanks swivel 15° in either direction. The double-acting hydraulic system puts full tractor weight on the points for fast, deep penetration. For complete data on rippers for TD-14, TD-18, or TD-24, request Greenville Bulletin IH 157.



GREENVILLE

STEEL CAR COMPANY

ATECO DIVISION
Greenville, Pennsylvania

For more facts, use Reader-Reply Card opposite page 18 and circle No. 313

Raw material + education:

A formula for engineering manpower

There are a good many criticisms of education these days—both general and engineering education. People are telling us what is wrong with an engineering education. I feel there must be a good deal right with the system of education that has produced the technological team we have in this country.

This team, successful in pushing back the boundary between the known and the unknown, is made up

of scientists, engineers, and engineering technicians. It has been largely responsible for the tremendous increase in our standard of living. It has given American citizens the equivalent of about 60 mechanical slaves per citizen, which is the largest number available to any nation.

It gives us what we might call a technological population of 7½ billion people. In the past 100 years, there has been a huge expansion in this

country, an expansion made possible by technological and engineering developments. That expansion is going to continue. Automation is increasing. Jet engines, electrical and mechanical developments, computing and controlling machines, an adequate highway system, atomic energy, solar energy, and perhaps even the application of engineering and scientific principles to social problems—all are going to call for more and better technical training for a bigger and better technological team.

Engineering is one of the biggest of the professions in this team, and one of the fastest growing. It has expanded from about 30,000 men in 1890, to something like 650,000 at the present time.

More education

The increasing complexity of our modern-civilization, registration laws which are now in effect in all the states, and other factors, mean that in the future the chief source of engineers is going to be people holding at least the Bachelor's Degree.

There are still people qualifying as engineers without degrees, but they are getting fewer. And since it is getting harder to do it, I think it might be worthwhile to take a look at the situation in the engineering colleges, and see if we can do a little forecasting.

I have been in this business ever since the spring of 1946, when the American Society of Engineering Education appointed what came to be known as the "Compton Committee," the forerunner of the Society's Manpower Committee. We studied the indications of the people coming out of the service, and we sounded out the colleges as to how many students they could accommodate. They told us that they could take a maximum of 155,000 students, and then they proceeded to enroll 225,000.

That led to some restudy of the original Compton Report, which I was asked to make for the land grant college group in December of 1946. And I came up with a prediction of a surplus of engineers by 1952. After that, the Manpower Committee was appointed; we made annual reports, and each year we were a little less concerned over the prospects of a surplus, but we still didn't foresee shortages, until about 1950.

In January of that year the Engineers Joint Council issued a statement to the effect that a large number of employers of engineers expected to hire fewer engineers that year than they had the year before. This, coupled with the fact that we were expecting 50,000 Bachelors Degrees in engineering (the largest class in history), led to a lot of prophecies of a surplus of engineers, including the famous wall chart which was issued

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AERO DESIGN & ENGINEERING CO

For more facts, use Reader-Reply Card opposite page 18 and circle No. 314

by DR. HENRY H. ARMSBY, Chief for Engineering Education,
Office of Education, Department of Health, Education and Welfare
Washington, D. C.

by the Department of Labor. (The actual number of bachelors degrees that year was 53,000.)

From 1935 to 1945, engineering freshmen averaged about 8 per cent of all freshmen. This percentage rose to 13½ per cent in 1946, when the engineering schools enrolled the all-time record class of 93,000. Engineering Bachelor Degrees four years later quite naturally had a similar rise, from a pre-war average of about eight per cent of all bachelor degrees to a maximum of 12 per cent in 1950, when the record class of 53,000 graduated.

The Bureau of Labor Statistics chart showed the rise in degrees to 1950, and stopped there, giving many people the impression that we were going to continue graduating 50,000 or more per year. If we had done so, there would no doubt have been a surplus.

However, freshmen engineering enrollment had been falling rapidly, until, in the fall of 1950, they numbered only 42,000 and constituted 7½ per cent of all freshmen. It was obvious from general trends that a further decline was in store for 1951. Based on these facts, I predicted, two months before Korea, that we faced the prospect of a shortage of engineers by 1952. The outbreak of Korean hostilities created such a strong demand for engineers that the shortage developed in a few months instead of a few years. It has been with us ever since, and bids fair to continue for at least the next ten years, if not longer.

Biggest shortage

Engineering freshmen reached their low point in 1951 when they numbered 34,000 and constituted 6.6 per cent of all freshmen. They then increased steadily to 10.6 per cent in 1954 and have remained at practically a constant percentage since—increasing numerically, of course, as total freshmen increased.

Engineering Bachelor's Degrees reached their low of 22,000 in 1954, and increased to 26,000 in 1956. My predictions, based on population and educational trends, are that they will continue to increase and will number about 56,000 by 1965.

This looks pretty hopeful, but let's see if it will be enough. The National Science Foundation has estimated, based on the Gross National Product, that from 1955 to 1960 there will be an average of 50,000 new engineering jobs to be filled each year. Adding 10,000 per year to cover deaths and retirements makes a total demand of 60,000 per year.

To meet this need, we expect to have an average of 37,000 men each year receiving engineering Bachelor's Degrees, plus the number who qualify as engineers without receiving degrees during the period. This averaged 15,-

000 per year between 1940 and 1950, which is probably too high now. But using this figure, we have a total supply of 52,000—leaving an average annual deficit of 8,000.

For the period 1960 to 1965 a similar procedure produces practically the same result.

This does not mean that in the ten-year period we will have a total shortage of eighty thousand.

I do not think we can accumulate

shortages that way.

If a company plans to do certain things and wants a certain number of engineers, but doesn't get those engineers, it simply does not do all those things. In the next year it will probably try again to get them, but probably will not try to get twice as many. We have an extremely simple example in my own office. We have had a vacancy on our books for three years for a specialist in science and mathe-

matics. We finally filled it this year, but with one man, not three.

No surplus

But my analysis means to me that I cannot foresee any possibility of a surplus of engineers. I place little faith in the mathematical accuracy of any of my figures, but I do think that they are good enough to show the general trends, and I just can't conceive of any possibility of a surplus in

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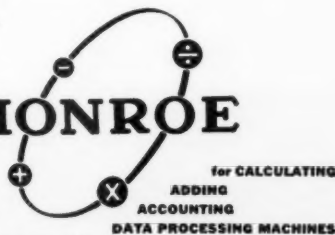


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engineers with all the development that is going on in this country.

Many major organizations, both governmental and non-governmental, have been concerned with the overall problems of manpower shortages. A recent bulletin of my office lists 25 of them, and describes briefly their activities; of these, the National Committee for the Development of Scientists and Engineers is a particularly interesting group, and is something rather unique in government circles.

This committee was appointed by the President, but there is not a single government person on it. It is composed of the presidents of some 19 private organizations, representing engineering, science, education, management, labor, state, and local governments, and the humanities. The

committee is to formulate plans for action by the organizations represented on the committee, not by the federal government. The first two problems they decided to tackle were the development of the technician and the improvement of high school science and mathematics instruction.

I do not think there is any question but what the activity of all those groups, including such organizations as the Engineering Manpower Commission, represented here today by Mr. Dixon, have had a considerable effect in arousing the public to the seriousness of the problem. This is evidenced in a great many ways, including the legislation introduced in Congress. There were a large number of bills last year proposing various methods of doing something about

this situation. There are a lot more being introduced this year.

Now, what can be done about this problem? First, there are three basic methods of attack which might be used. One is to produce more engineers and scientists; the second is to improve their quality; and the third is to make better use of the ones we have. Probably what is needed is a combination of all three of these methods.

Two methods

Now, as to methods of getting more engineers, we can proceed in two different ways. First, try to influence more of our college students to take engineering and science. This might conflict with other professions, which also need good men, and which are

needed in the national economy.

The best approach in my opinion is to try to change the proportion of capable high school graduates that go to college. We have reports such as that of the Commission on Human Resources which indicate that about one half of the students graduating in the top fifth of their high school classes do not go to any kind of college. Their reasons are varied: some financial; some just lack of interest; lack of family tradition, and lack of guidance in the high school.

The top fifth of the high school class of last year would amount to about 264,000 boys and girls. About 127,000 of these are boys. Half of these, or 63,000, do not go to college. If we could get all this group into engineering, they would produce about 36 thousand engineers at the end of four years. We can't get them all; we don't want that. Other professions need these capable youths too. But this is a fertile field, composed of boys and girls who have the mental ability to do engineering, but who are not doing it. They are not doing any of the other things which would use their mental capacities. I think that this is the area in which we need to concentrate our activities.

Career days

There are various ways this can be done. One method is to hold career days. They are held in a great many areas and should be held in many more. A "career day" is a school day, or it may be an hour, or a couple of hours. It may be in class or during the evening; it makes little difference. The basic idea consists of giving high school students some accurate, unprejudiced, objective information about the various professions, so that they can obtain an intelligent basis for choosing what they want to do for their life work. It should be, of course, real guidance, not propaganda.

The various state universities are interested in this. A circular is issued by the state of Iowa, Department of Public Instruction, on career day suggestions. Similar programs exist in most states. I was working on such programs in Missouri as long as 25 years, going around visiting high schools, trying to tell boys what engineering is, what kind of boys should try to take engineering, what the opportunities were, not just trying to persuade students to come to my school. I advised them usually that I was just as anxious to keep some of them away as I was to get some to attend. But I tried to paint an honest picture for them of what engineers do, what kind of qualifications they need, and what kind of a person could reasonably expect to make a success in engineering.

I was welcomed by the high school administrators all over the State of Missouri. For several years I was the only college representative who was allowed to speak to the students in Kansas City, Mo., high schools during school hours, simply because I did not try to persuade them to come to my school. I tried to do an honest conscientious job of guidance. Re-



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cently I have taken part in similar programs in Washington, at George Washington University and at Howard University.

Several programs

The big programs usually have representatives of a number of professions at the same time. For instance, the Iowa pamphlet suggests that several occupational groups might be represented in one guidance day. The suggested list of professions occupies a page and a half.

The Associated General Contractors of America is in a position where it can make a valuable contribution to this type of program, getting this information into the schools in local communities. Perhaps some of the informational talks might be given by AGC members living in the locality. Such things as science fairs, similar to the Westinghouse Science Talent Search, might help recruit potential students of engineering. This year, 40 youngsters, selected out of some 3,000 contestants all over the country, were brought to Washington to visit the scientific laboratories and nationally known scientists. Ten of them were awarded scholarships, the most valuable scholarship worth \$2,800.

Science clubs

There are some 16,000 science clubs now active in the United States. The kids are enthusiastic about them and the clubs are one of the best ways to get them interested in science and engineering. And junior high school is not a bit too early to start. These clubs can be started in any community, and they can do a great deal of good.

Such things as inspection trips, which give boys a chance to see a plant, are very worthwhile. If they are taken through a plant, and things are explained to them, the trip may generate an interest in engineering as a vocation.

Another experiment has produced unexpected results. The National Science Teachers Association held its annual meeting in Washington, D. C., last year, and in order that the teachers of science and mathematics in district schools could attend, about seven hundred local engineers and scientists went into the classrooms and substituted for the teachers for a day. It was such a big success that the schools asked the engineering societies to do it again this year and to let the teachers remain to watch.

Gaps to be filled

These are a few of the things that can be done to help out on the national problem. The figures and the forecasts I have presented are probably not very accurate. I do not think that makes any difference. What is important is that everyone remembers that there is a shortage of trained engineers, and that if the gap is to be filled, everyone has to do his utmost to help talented youth become part of a bigger and better technological team.

THE END

From an address by Dr. Henry H. Armsby before the 38th annual convention of the Associated General Contractors of America, Inc., Washington, D. C.

MAY, 1957

WHEN WORKMEN BUILDING THE LEAVENWORTH BRIDGE over the Missouri River in Kansas get thirsty, they stop at one of several Igloo water coolers that are spotted around the construction site. The insulated coolers, made by the Bettis Corp., are available in 2, 5, 10, and 15-gallon sizes. A special plastic lining keeps the water or other liquids clear, odorless, and taste-free under the roughest conditions. The bottom of the cooler is constructed so that there is no metal-to-metal contact. For further information write to the Bettis Corp., P. O. Box 9091, Houston 11, Texas, or use the Request Card at page 18. Circle No. 152.



New Forming Technique Produces Sawed Joints At Less Cost

FIGURE 1



...uses **KORK-PAK®** as dummy joint filler; removes filler after concrete cure by sawing

An interesting new joint forming and sawing technique, in which lengths of KORK-PAK—a non-extruding expansion joint filler, are used as a dummy joint filler and then sawed out by an inexpensive $\frac{3}{8}$ " carborundum blade after the concrete is cured, has been developed and used with good results by T. L. James Construction Company on a Mississippi State Highway Project. Location of the Project was on Route 51, south of Jackson, Miss.

Clean, straight $\frac{1}{4}$ " joints (Fig. 1) are produced at a fraction of the cost of sawing $\frac{1}{8}$ " joints in the ordinary manner with a diamond blade. Joint sawing speed was considerably in-



KORK-PAK DUMMY JOINT is embedded in concrete. Figure 2

creased, and the resulting $\frac{1}{4}$ " wide joint was sealed with "Zero-Lastic"® a single component, cold-applied joint sealing compound manufactured by Servisised Products Corporation, Chicago, who also produce the KORK-PAK material used on the project.

KORK-PAK is a composition of asphalt and granulated cork, formed between two sheets of asphalt saturated paper. It is non-extruding and is readily handled without breakage. It is a general purpose joint filler widely used on highway and turnpike



HAND FINISHING over embedded joint produces smooth surface. Figure 3

projects. The KORK-PAK material was easily sawed out and did not gum up the blade, as did other types of asphalt and hard-board joints.

Essentially, the new technique consists of embedding $\frac{1}{4}$ " wide x 2" high lengths of the KORK-PAK in transverse and longitudinal joints at the time the concrete is being placed (Fig. 2). Transverse joints were spaced at 31'4" intervals. The small surface sections of concrete disturbed by insertion of the joint were finished by hand. (Fig. 3).

At a convenient time (because cracking was controlled by the dummy joint) the contractor, using a saw with an abrasive blade,



AFTER CONCRETE CURES, top 1" of dummy joint is sawed out. Figure 4

quickly and easily removed the top inch of the KORK-PAK (Fig. 4), leaving the other inch undisturbed in the concrete. Sawing the joint when convenient eliminated the necessity of overtime.

Using the KORK-PAK dummy joint technique, the contractor reported getting from 2500 to 3000 lineal feet per blade. The $\frac{1}{4}$ " joint obtained was practical to seal and gave the pavement the same riding qualities as one in which the joints were sawed by a



SEALING JOINT — "Zero-Lastic" Cold-applied material is pumped into joints from container. Figure 5

diamond blade in the conventional manner.

After cleaning the sawed joints, the contractor applied Servisised "Zero-Lastic" Joint Sealing compound (Fig. 5) in the usual manner.

More information and specific details on the material and equipment used on this project are available from Servisised Products Corporation. Write for the Servisised Catalog which contains valuable data and complete details on Servisised Asphalt, Cork and Rubber composition products for the construction industry.

SERVISISED PRODUCTS CORP.
6051 W. 65th Street Chicago 38, Illinois

For more facts, use Reader-Reply Card opposite page 18 and circle No. 317

The new Eimco Model 105 front-end loader has a 2½-cubic-yard struck capacity and can operate in 9½ feet of head room.

IT's NEW --- The Campbell Sliding Cab



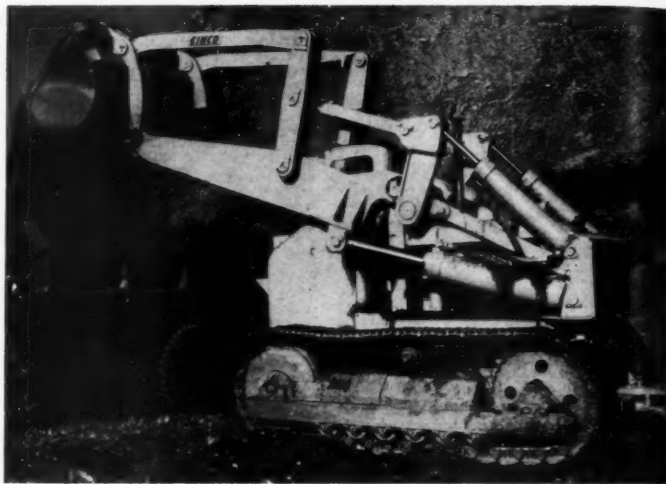
for the models HU, HH, and HO
"Payloaders"!!!

This sturdy, modern design offers features long desired by "PAYLOADER" operators, among them—Sliding top, ball bearing mounted on steel channel—Rubber seals to insure weather tightness—Permanently mounted access ladder—Rear view mirror—Tinted safety glass windshield and skylight.

Investigate this completely new design in "Payloaders" Cabs by calling your "Payloaders" distributor, or contact

CAMPBELL DETACHABLE CAB CO.
WAUCONDA, ILLINOIS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 318



Front-end loader works in 9½ feet of head room

■ A front-end loader that operates in 9½ feet of head room is announced by The Eimco Corp. The Model 105 is powered by a 132-hp engine and takes a 2½-cubic-yard struck bucket. The loader can reach over a 14-foot obstacle, because of the bucket's high pivot point, and has a maximum dumping height of 11½ feet.

The break-out force with the bucket heeled on the ground is 40,000 pounds. Maximum load and lift at ground level is 25,000 pounds. Maximum lifted load to full height is 15,000 pounds. The entire rig weighs 44,000 pounds.

In the dumping position, the bucket is extended 4½ feet in front of the loader. The pump working pressure in the hydraulic system is 650 psi, and the pump delivers 150 gpm.

For further information write to The Eimco Corp., P. O. Box 300, Salt Lake City, Utah, or use the Request Card at page 18. Circle No. 44.

New type of belt drive

■ A single-belt drive which takes the place of multiple V-belt drives is described in a brochure from the Manhattan Rubber Division of Raybestos-Manhattan, Inc. The Poly-V drive is a single unit across the full width of the sheave. It is available in two standard cross sections which, the manufacturer states, take the place of the five standard V-belt cross sections.

The brochure explains how the Poly-V belt eliminates the problem of matching several V-belts that may vary in exact length. It points out that the new belt has an uninterrupted line of strength, as opposed to the interrupted line of strength in a multiple V-belt arrangement. According to the manufacturer, Poly-V belts have twice the contact area with half the face pressure, as compared with multiple V-belts.

How Poly-V belts maintain constant effective pitch diameter at all loads is explained, as is the fact that the new belts deliver more power in less space and with narrower sheaves.

To obtain Brochure No. 6638B write to the Manhattan Rubber Division, Raybestos-Manhattan, Inc., Passaic, N. J., or use the Request Card at page 18. Circle No. 147.

CONTRACTORS AND ENGINEERS

New SUPERIOR Heavy-Duty SCREED SUPPORTS

Pat. Applied For

For Use with 1¼" and 1½" I.D. Pipe Screeds and Vibratory Screeding Equipment



ADJUSTABLE SCREED HOLDER

Consists of a 1" threaded rod to which is welded a cradle to hold the pipe screed. This cradle is slotted as shown so that the arms may be bent over to secure the 1¼" or 1½" I.D. pipe screed. Threaded onto the rods is a half nut which provides the adjustment.

Especially Designed for Use on Bridges, Underpasses and Overpasses

These Screed Supports are designed to take the heavy loads imposed by traveling vibrating screeding equipment. The Bases for the screed holders are of two types: (1) The Metal Base for use on structural steel members; (2) the Chair-Type Base for use on a plywood deck.

On Structural Steel: As shown above, the Metal Base is tack-welded to the top flange on approximately four foot centers. The Screed Holder is set into the base, and adjusted to height by turning the nut. The threads are fast, three to the inch, and of a contour type, non-clogging and easily cleaned.

On Wood or Plywood Decks: The Chair Base is set on the deck at approximately four foot centers. It is easily secured to the deck by nailing across the upturned legs. If desired, legs can be supplied of galvanized wire. The Chair Base with holder is shown below.

PERFORMANCE

Superior's Heavy-Duty Adjustable Screed Supports have been used on turn-pike structures and other projects. Results in the field indicate that this method of supporting screeds provides a simple answer to an otherwise expensive and complicated set up. Write for Bulletin.

HOLDER INSERTED IN CHAIR BASE

Only the inexpensive bases are left in the concrete. The Adjustable Holders are easily removed, together with the pipe screed, because the holders are set, not screwed into the base. The nut fully covers the base opening and prevents concrete from entering.



Adjustable Standard SUPERIOR SCREED CHAIRS

FOR FORMED SLABS 4½" AND GREATER
With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.



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New York Office

1775 Broadway, New York 19, N. Y.

Pacific Coast Plant

2100 Williams St., San Leandro, Calif.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 319

The Gar Wood Model 160 ladder-type ditcher is now equipped with a hydraulic boom hoist.



Hydraulic controls added to ladder-type ditcher

■ Hydraulic controls have been added to the Model 160 ladder-type ditcher manufactured by Gar Wood Industries, Inc. Designed for water-main and deep sewer excavation, the ditcher is now equipped with a hydraulic boom hoist.

The boom is raised, lowered, and held stationary by an independent package-type hydraulic control system. No friction boom clutch or brakes are required. Double-acting hydraulic cylinders provide full crowd for the boom.

The Model 160 digs to a depth of 16 feet and to widths of from 18 to 48 inches. Its shiftable boom permits it to work close to obstructions. Reverse digging speeds allow undercutting of sidewalks and pipes.

For further information write to Gar Wood Industries, Inc., 36253 Michigan Ave., Wayne, Mich., or use the Request Card at page 18. Circle No. 97.

Tilt-up mixer detailed

■ A catalog describing a tilt-up mixer for use in ready-mix plants, in its Porto-Plants, or for central-mix paving is available from the L. Burmeister Co. The catalog details such features of the mixer as positive tilting, blade design, main and edge rollers, split drum, ring gear, and hard-surfacing.

One page diagrams and lists dimensions. The center spread shows complete specification for all models, which range in capacity from 1 to 7½ cubic yards. Optional equipment is also noted.

To obtain this bulletin write to the L. Burmeister Co., 4535 W. Mitchell St., Milwaukee 14, Wis., or use the Request Card at page 18. Circle No. 32.

Essick names Allison Midwest representative

The Essick Mfg. Co., Los Angeles, Calif., has named William C. Allison district representative for Illinois, Indiana, Iowa, Michigan, Minnesota, North and South Dakota, Ohio, and Wisconsin; and the Canadian provinces of Saskatchewan, Manitoba, and western Ontario. Allison, who has been selling Essick equipment in the Los Angeles area for several years, will have headquarters in Chicago, Ill.

For more facts, circle No. 320→

Single-drum hoists

■ A booklet describing single-drum multi-purpose portable hoists is available from the Joy Mfg. Co. The booklet contains descriptions and specifications for the Joy line of air, electric, and gasoline-driven models. Ranging in size from 0.9 to 15 horsepower, the hoists have lifting capacities from 750 to 5,000 pounds at rope speeds up to 125 fpm. Wire rope capacities range from 200 to 1,500 feet.

To obtain this booklet write to the Joy Mfg. Co., 333 Oliver Bldg., Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 38.

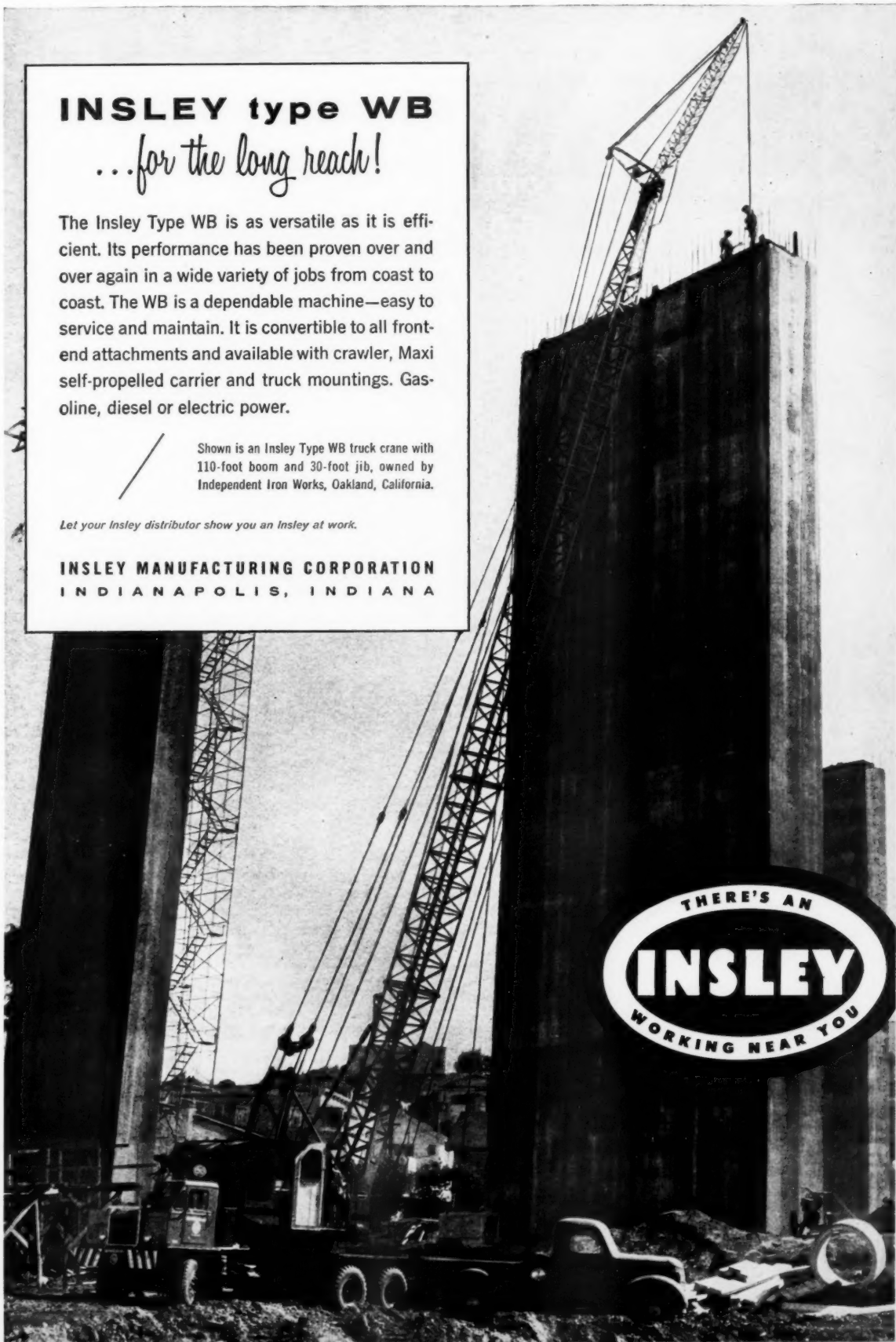
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Shown is an Insley Type WB truck crane with 110-foot boom and 30-foot jib, owned by Independent Iron Works, Oakland, California.

Let your Insley distributor show you an Insley at work.

INSLEY MANUFACTURING CORPORATION
INDIANAPOLIS, INDIANA





As the prefabricated steel form for the base of a pier arrives by barge, a barge-mounted Clyde Whirley crane stands ready to push the form into the river for positioning. The "V" of sheet piling protects the operation from floating debris.

Pier caissons sunk by dual methods

Steel caisson floated into place to start midstream pier; approach piers, supported on timber piling, are subcontracted

A combination of open and pneumatic methods were used to sink the reinforced-concrete caissons forming the four main piers of the New Fairfax Bridge near Kansas City, Kans., a 2,600-foot vehicular span over the Missouri River.

Located adjacent to and similar in design to the present Fairfax Bridge, the span will handle northbound traffic when it is completed in October, while the existing bridge will accommodate southbound traffic. But only on the new bridge will a toll be collected to help repay the \$5,350,000 bond issue financing the project. The span's 26-foot concrete roadway will be supported by cantilever through trusses spanning three openings of 417, 475, and 417 feet, and these will be flanked by one 300-foot through truss.

The substructure, just completed, consists of four main piers of reinforced-concrete carried to a sandstone bedrock foundation and seven south approach and five north approach span piers of reinforced concrete supported by timber piling. Designed and inspected by Sverdrup & Parcel, Inc., St. Louis, Mo., the span is being built under a \$3,028,955 contract by Kansas City Bridge Co., Kansas City, Mo.

Use two methods

The four main piers, consisting of reinforced-concrete caissons, were first dredged almost to rock by the open-dredge method. Then the dredge wells were plugged and compressed air pumped into the pier by four Joy 630-cfm compressors, two rotaries, and two reciprocals. The deepest pier landed 96 feet below standard low water; the shallowest landed 75 feet below standard low water.

Although the dimensions of the four bridge piers vary, the shape of the midstream pier is typical. The base section of the pier is 22x51 feet, with semicircular ends. It contains a 7-foot-high working chamber equipped with a 4-inch steel cutting edge, and three 10-foot 6-inch diameter circular dredge wells. This section rises to about water level, where it is topped with an ice breaker section of smaller dimensions. The ice-breaker is 20 feet high and its overall dimensions are 11x47½ feet, with semicircular ends. The three dredge wells are stepped in to 8-foot diameters. The ice-breaker supports two

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Other advantages are reported by three key officials . . . Sidney Cagan, Sales Manager, notes a 100% increase in efficiency in his operation, faster escrow clearances, extra good service to customers. Purchasing Agent B. M. Moore says it speeds up completion

work by keeping superintendents informed of delivery schedules. With more than 1000 homes in 5 different tracts, the maintenance crew under Ed Meibos saves thousands of dollars annually for the company by getting the jump on sudden repairs and storms, eliminating needless trips. In real emergencies, such as accidents to workmen, the radio proves invaluable in getting medical attention without delay.

The Larwin Company is enthusiastic about two-way radio and, as a builder of fine homes, Larry and Bill Weinberg's successful firm has understandably standardized on the finest in radio . . . RCA.

Larwin Company installation consists of RCA Citizens Band Radio, Carfone-450. Four 15-watt base stations, 2 remote control units; 6 15-watt mobile units. Use coupon below for additional information about RCA 2-Way Radio for construction applications.

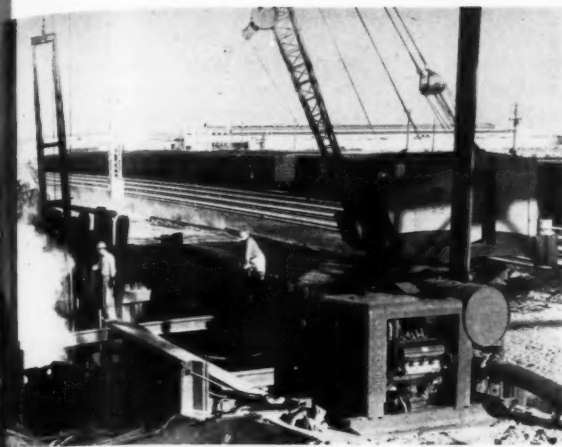


Radio Corporation of America
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Dept. 5-277, Building 15-1, Camden, N.J.

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◀ Using a McKiernan-Terry steam-driven hammer, a Koehring 405 drives piles for the footings of a pier. A 6-inch jet pump driven by a Chrysler engine, fore-ground, assists in the operation.



A Williams clamshell comes up from the 7-foot-high working chamber of a pier with a full load. The pier contains three 10½-foot-diameter dredge wells.

rectangular shafts connected by a web wall. The shafts are 7×6½ feet at the top and batter 3/16 inch per foot on the outside faces; the inside face is vertical. The two shafts support a "T"-shaped cap that is 160 feet above the sandrock on which the pier is seated.

Before starting work on the mid-stream pier, the contractor drove sheet piling in the shape of a "V" on the upstream side of the pier to serve as a breakwater and protect the construction from river debris. Then guide piles were driven by a McKiernan-Terry 9-B-3 steam hammer, supported by a barge-mounted Clyde Whirley crane, to hold the form for the bottom of the pier in position.

To start the mid-stream pier in 8 feet of water, the contractor floated the form for the bottom of the pier into position, then poured concrete into the form to sink it. The steel caisson form or shoe, fabricated in Leavenworth, Kans., by the Missouri Valley Steel, Inc., arrived at the job site by barge and was skidded into the water with the aid of a Clyde Whirley and floated into position.

(Continued on next page)

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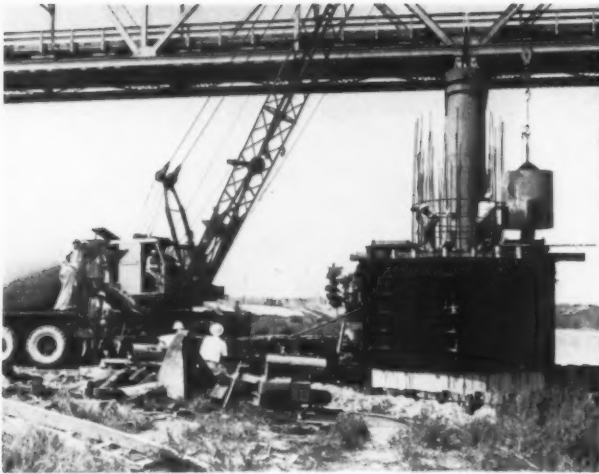
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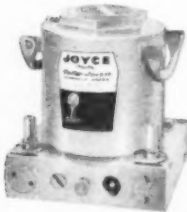
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As a Bucyrus-Erie 38-B crane swings concrete from the transit-mix truck to the steel forms, workmen help position the 2-yard bucket over the forms. Concrete is placed in 9-foot lifts.

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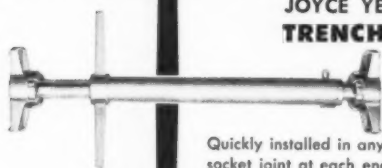
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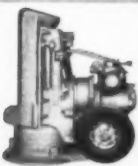
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CANADA: Midland Foundry & Machine Co., Ltd., Midland, Ont.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 324

(Continued from preceding page)

The shoe, which included the cutting edge and the working chamber, was built up to a height of 10 feet on the outside wall and 20 feet in the three circular dredge wells. The prefabricated steel panels of plate, 10 feet high, had horizontal angle stiffeners backed by double 8-inch channel wales welded vertically. The two rectangular side panels were bolted to the two semicircular end sections to make the form.

The forms for the shafts were of 3/4-inch plywood backed by 2x6 studs and double 4x6 wales. In forming the shafts, the contractor used Superior form hardware.

Concrete was carried to the form by two launches, each with a scow

carrying three Wiley 2-yard buckets. The floating crane handled buckets of Type II concrete as the 9-foot lifts were made. Two Maginniss Hi-Lectric vibrators consolidated the material. The forms were usually stripped after one day. Then the floating crane worked through the dredge wells with a Williams 1 1/4-yard clamshell to make the pier settle.

The 16,000 cubic yards of ready-mix concrete required for the job was supplied by Concrete Materials Inc., and Stewart Concrete Co., both of Kansas City, Kans. When work was in progress on the mid-stream pier, the transit-mixers unloaded at a dock into a Gar-Bro two-compartment hopper with an ele-

This Koehring 405 crane uses an Insley 3/4-yard bucket to place concrete for a tremie pour on a north approach land pier. Concrete is being delivered by the truck-mounted transit mixer.



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CONTRACTORS AND ENGINEERS

An American 25-ton truck-crane uses a Vulcan 400-A steam-powered extractor to pull cofferdam sheeting for the land pier at the south end of the new Fairfax Bridge. The span, similar to the existing bridge, will carry north-bound traffic only.



phant truck that led to the bucket on the scow. When work got under way on other piers, the transit-mixers unloaded into a Wiley 2-yard bucket handled by a Bucyrus-Erie 38-B crane.

Subcontract approach piers

While the general contractor was working on the river piers, Maxwell Bridge Co., Columbus, Kans., the subcontractor, was building the 12 approach piers. Excavation for the footings was handled by a Koehring 405 crane with a Wellman 1 1/4-yard dragline bucket. The dragline operator was able to keep practically vertical sides on a 52x20-foot hole dug in a depth of 30 feet on a pier located on the Missouri side. A cofferdam frame was built in the excavation with 12-inch H-beam wales and 10-inch H-beam struts. The cofferdam was practically driven on the Kansas side before excavation started. After some excavating had been done, the cofferdam was driven to grade. This cof-

ferdam structure was given extra strength, since the individual frames were tied to one another with Acme 2-inch steel bands set on diagonals. Then an American 375 crane with a McKiernan-Terry 9-B-3 hammer drove the interlocking sheet piling around the outside of the cofferdam frame.

Footings on wood piles

The 21,000 feet of wood piling for the approach piers was driven by a McKiernan-Terry steam hammer on a Koehring 405 crane. The wood piles, which often required jetting, were driven to an average depth of 35 feet, and as many as 114 piles were sunk in one pier. Five feet of each pile were left sticking up in the excavation. A concrete seal buried four feet of the pile and the end foot penetrated the actual footing.

Each reinforced-concrete pier is made up of two rectangular shafts resting on two footings. The two shafts are connected by a horizontal

strut and are topped with a box-shaped cap. Conventional plywood forms with Richmond snap ties were used in the forming. Concrete for the piers was furnished by Concrete Materials, Inc., Kansas City, Kans. The Smith mixers mounted on International trucks unloaded into an Insley 3/4-yard bucket that was handled by the Koehring 405 crane. The concrete was poured with a tremie, and a Jackson electric vibrator consolidated the mix.

The Kansas City Bridge Co. has Sam Yerby as superintendent in charge of substructures. The field engineer is Joe Hummel. Sverdrup & Parcel has Paul Himebaugh as resident engineer and Frank Rainey as assistant resident engineer. The field engineer is Frank Theising. THE END

Unit-engine rating chart

■ A rating chart for its line of engines and power units is available from the International Harvester Co. The chart offers brake horsepower on engines without fan or accessories, and on power units with fan and accessories.

The horsepower ratings are corrected to standard conditions at sea level (29.99 inches HG) and 60 degrees F. Ratings are given on all fuels which can be used in the carbureted units. A separate page lists typical applications of the IH units.

To obtain CR-522-G write to the International Harvester Co., Construction Equipment Division, 180 N. Michigan Ave., Chicago 1, Ill., or use the card at page 18. Circle No. 68.



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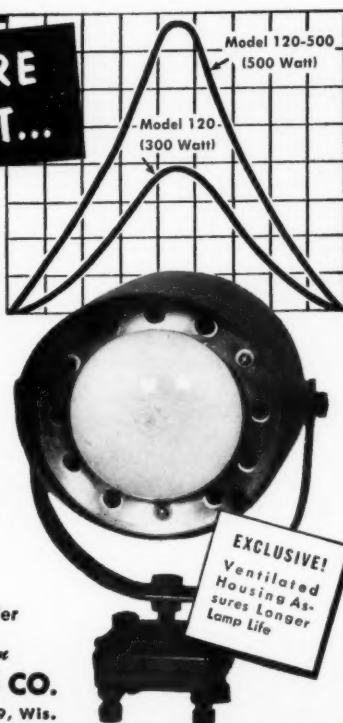
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- Adds to SAFETY!...
- Especially Adapted for Operations Such as Open Pit Mining, Stripping, Dredging, Excavating, Crushing and Mix Plants, Logging, Road Building, Drilling, Quarrying, Etc.

WRITE For Illustrated Folder

Metal Spinning Division
PHOENIX PRODUCTS CO.
4727 N. 27th St. • Milwaukee 9, Wis.



For more facts, use Reader-Reply Card opposite page 18 and circle No. 326

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 327



The M-B self-loading bucket features a hydraulically operated jaw that pulls the load into the bucket and holds it there.

Self loader for trucks has patented jaw action

■ A loading bucket attachment for dump trucks with a patented hydraulically-operated jaw that swings down and reaches out to meet ground level approximately 13 inches forward of the bucket lip is available from the M-B Corp. The jaw completes its closing cycle by pulling in and holding the full load in the bucket.

The jaw action of the self-loading bucket eliminates the necessity of ramming the truck into a stockpile to obtain a full bucket load. When picking up small piles, the jaw fills the bucket quickly without "chasing" the material and without the need for

workmen to sweep or shovel the material into the bucket, the company points out.

Two sets of hydraulic rams operating in unison provide full power and control throughout the loading cycle. They lift the arms up and beyond the vertical position, permitting the bucket to be stopped and dumped at any point over the truck body. Two hydraulic cylinders on the bucket operate the closing action of the jaw.

The M-B loader is designed to fit most trucks, including four-wheel-drive units, and cab-over engine, tilt-cab, and conventional cab units. The standard heavy-duty bucket has a capacity of $\frac{1}{2}$ cubic yards. Larger buckets are available to meet special requirements.

For further information write to the M-B Corp., 1635 Wisconsin Ave., New Holstein, Wis., or use the Request Card at page 18. Circle No. 146.

Soil testing manual

■ The unconfined compression test for cohesive soils is described in detail in a testing manual prepared by Soil-test, Inc. Standard engineering test procedures using laboratory equipment especially designed for the soil compression tests are outlined in the manual.

Written for engineering, laboratory, and educational instruction use, the 56-page book deals with the interpretation, application, and limitations of the test data obtained, as well as with procedures and testing equipment.

To obtain this manual write to Soil-test, Inc., 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 31.



buy from the line of strongest design... Hercules!



Hercules Model 1215 high-speed telescopic hoist and CD-20 batching body handles four 5,150 lb. batches for J. A. Jones Construction Co.

for high-speed, cost-cutting batching work...
**New Hercules hoist raises and dumps
in less than 6 seconds!**

2,500 ft. of 24 ft. x 9 in. slab per 9 hour shift! That's the amazing production pace maintained by J. A. Jones Construction Co., Charlotte, N. C. on a recent by-pass job near Mansfield, Ohio—thanks to Hercules' new high-speed telescopic hoists.

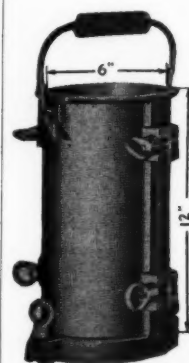
Because the batch trucks could back into the skip, dump, and pull clear in 11 seconds, the dual-drum pavers were able to deliver a 37.4 cu. ft. mixed batch at 51 second intervals!

Especially designed for Jones' use on this job, the new Hercules high-speed hoist raises to full dump position in 4 to 6 seconds. A special new bleeder valve

provides hydraulic cushioning at the end of the lifting stroke. And, accelerating the truck engine at the top of the stroke provides a rapid 4 to 10 in. rising and falling motion of the truck body. Complete, clean dumping of each batch is assured, without "frogging" the truck. According to the contractor, Hercules 6 second, 4 batch equipment has reduced his investment in batching trucks 20%.

See your Hercules distributor... he'll show you how this new hoist and batching body can boost production and cut costs on your paving jobs, too. Call him now!

AA-4812



To obtain
specimens
which show
full strength
compression
tests, use
MOLINE

CONCRETE TEST CYLINDER MOLDS

You can produce accurate test specimens to exact measurements with Moline Molds. They meet all ASTM requirements and are virtually indestructible—because they are made of refined malleable iron. Portable for laboratory or field work. Various sizes available including standard 6" x 12" Model A (illustrated). **REMEMBER — A TEST IS ONLY AS GOOD AS THE SPECIMEN.**

MOLINE IRON WORKS
Moline, Ill., U.S.A.
75 Years of Service

For more facts, circle No. 329

CONTRACTORS AND ENGINEERS

HERCULES STEEL PRODUCTS COMPANY, GALION, OHIO

For more facts, use Reader-Reply Card opposite page 18 and circle No. 328



The Erie Port-O-Matic truck mixer plant, a product of the Erie Strayer Co., is designed for one-stop mixer loading. It has a capacity of 160 cubic yards per hour.

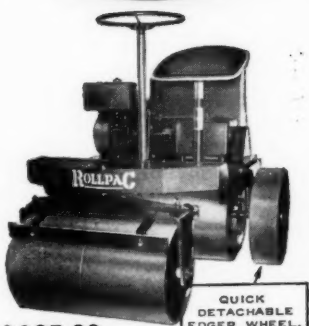
Portable plant features one-stop loading cycle

■ A complete portable truck mixer plant designed for one-stop mixer loading is available from the Erie Strayer Co. The Port-O-Matic has all bin compartments in a single 100-cubic-yard unit. Aggregates, sand, and cement are batched onto a wheel-mounted conveyor that transfers the materials directly to the transit mixer truck.

The multi-compartment unit eliminates the necessity for setting up more than one structure and for moving the truck from bin to bin. The Port-O-Matic automatically weighs all materials. It has a capacity of 160 cubic yards per hour.

The plant is made up of four sections that are easy to handle, the company reports. It can be set up or dismantled in six to eight hours. No foundations are needed; mud sills and column supports are all that is necessary. All electrical connections are of the socket type.

For further information write to the Erie Strayer Co., P. O. Box 1031, Erie, Pa., or use the Request Card at page 18. Circle No. 45.



\$895.00

A Standout One Ton Roller
in worldwide use by
Contractors, Paving Engineers
and Institutions.

Ask To See It.

ROLCOR Industries
1208 2nd Ave. So. Minneapolis 3, Minn.
For more facts, circle No. 330

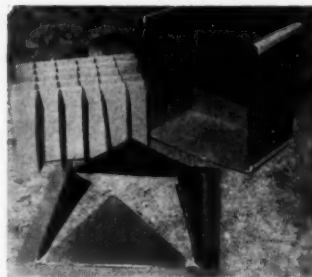
MAY, 1957

Waffle-type slabs made from corrugated fibreboard

■ Corrugated fibreboard forms for the casting of waffle-type deck slabs are available from Concrete Forms, Inc. The forms are said to produce a finished surface that requires no rubbing or grinding. Custom-made forms are manufactured to sizes and shapes specified.

The corrugated forms are laminated with a waterproof adhesive. The butt joints are sealed with special tape and all contact surfaces are coated with a mixture containing paraffin, polyethylene, silicones, and other additives. This coating is reported to give the smooth finish to the slab.

For further information write to Concrete Forms, Inc., P. O. Box 13702,



Waffle-type forms made of corrugated fibreboard are coated with a mixture which makes possible a smooth, finished surface when the forms are stripped.

Dallas 24, Texas, or use the Request Card that is bound at page 18. Circle No. 103.



B-60 SERIES—All-around workhorses for construction jobs everywhere. B-60 four- and six-wheel chassis are available for dumpers, concrete mixers, equipment hauling tractors, and flat-bed trucks... powered with Mack Thermodyne® gasoline or diesel engines in the 170 or 205 horsepower range.



B-80 SERIES—Largest and most powerful highway and off-highway chassis in the Mack line. B-80 tractors for heavy carry-all trailers and B-80 truck chassis for mixers and dumpers are available in four- or six-wheel models... powered with 170 to 205 hp Mack Thermodyne gasoline or diesel engines, or stock diesels in the 250 to 300 horsepower class.



B-40 SERIES—Widely popular for maneuverability and rugged strength. B-40 four- or six-wheel dumpers, mixers, flat-bed trucks and tractors are especially valued for their bonus capacities, economy, and handling ease. Powered by Mack 150 hp Thermodyne diesel or Magnadyne gasoline engines.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 331

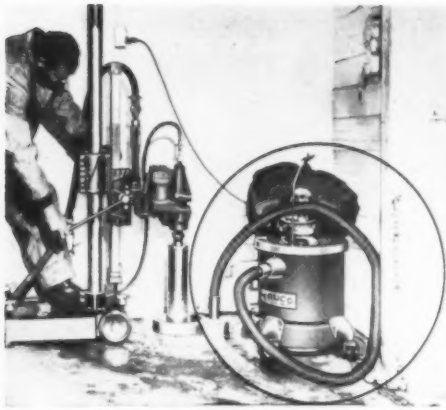
Most in demand... for the most demanding jobs

For dump, mixer, or flat-bed truck service in highway and off-highway hauling, Mack large-capacity trucks and tractors will do your toughest, most demanding jobs more efficiently, more economically, and more profitably. More, Mack offers you the widest selection of heavy-duty units with gross vehicle weights ranging from 25,000 to 65,000 lbs. and tractors for carry-all trailer service up to 175,000 lbs. G.C.W.

Have your local Mack representative give you complete details and specifications. Mack Trucks, Inc., Plainfield, New Jersey.
In Canada: Mack Trucks of Canada, Ltd.

MACK
first name for
TRUCKS

4839



The Truco Model T-440 vacuum water pick-up removes water and dry cuttings during diamond drilling operations.

Machine removes sludge during diamond drilling

■ A heavy-duty portable vacuum unit for picking up water and drilling sludge during diamond drilling operations and for final clean-up when the job is finished is available from the Truco Water Swivel Division of the Wheel Trueing Tool Co. The unit removes water and wet and dry cuttings when drilling into duct-type flooring, when working in finished floors, and when working in finished rooms where water could cause damage.

The Truco Model T-440 vacuum water pick-up consists of a high-velocity vacuum unit mounted on a 12-gallon heavy steel drum which

rides on four rubber-tire caster wheels. The nozzle is connected to 10 feet of rubber-lined cloth-covered hose. Beyond the tank, which collects the water and sludge from the diamond drilling operations, is a cloth bag which catches any dry material that may pass the tank.

According to the manufacturer, the high vacuum of the Truco unit leaves an almost 100 per cent dry condition. When even more extremely dry conditions are required, it can be used with a heavy-aluminum water collector ring which retains the water and permits high-velocity pick-up by the vacuum unit.

For further information write to the Truco Water Swivel Division, Wheel Trueing Tool Co., 3200-53 W. Davison, Detroit 38, Mich., or use the Request Card at page 18. Circle No. 71.

Battery buying guide

■ "So You're Going to Buy an Industrial Battery" is the title of a 16-page reference booklet available from Gould-National Batteries, Inc. Designed to help battery buyers select the most economical and efficient battery for their operation, the booklet outlines the significance of battery design and the contributions of research and development to lower operating costs, greater productivity, and greater profits.

A four-point program for battery users describes the importance of selecting the proper battery for the job, the purpose of correct handling and charging, reasons for systematic maintenance, and the value of a continuing knowledge of battery condition.

A condensed description of Gould's battery maintenance schools is given, as well as information on Gould's Plus-Performance Plan for achieving maximum life from a battery.

To obtain Booklet GB-1788 write to Gould-National Batteries, Inc., Trenton, N. J., or use the Request Card at page 18. Circle No. 105.

Paving plant layouts

■ Plan view drawings and photos of operating concrete paving plants for highways and airports are an important part of a 36-page catalog available from the C. S. Johnson Co., a subsidiary of the Koehring Co. A one-stop central mix and one, two, and three-stop batch truck plant operations are illustrated.

Also included in the catalog are a table and formula showing how to obtain maximum paver production through the proper utilization of equipment. Concise explanations for the operation of automatic batch control and recording systems, as well as bin and cement silo selection guides, are other features.

To obtain Catalog No. KJ 449 write to the C. S. Johnson Co., Box 71, Champaign, Ill., or use the Request Card at page 18. Circle No. 59.



Gardner-Denver "Air Trac" with 4½" drill on dam project.

Gardner-Denver "Air Trac"® one of the busiest drills in the business

Gardner-Denver "Air Trac" is a self-propelled drilling rig—powered by two high-torque, five-cylinder radial motors. It puts holes anywhere you want them—on steep hillsides, in rocky terrain, on level ground. Self-stabilizing column arm supports chain feed drilling mast. Available with

two drill sizes: DH123—4½", DH99—4".

TO ROCK WORK CONTRACTORS: Let us show you why Gardner-Denver "Air Tracs" are preferred by most contractors for heavy-duty drilling. Write for illustrated booklet.



ENGINEERING FORESIGHT—PROVED ON THE JOB
IN CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY
GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

For more facts, use Reader-Reply Card opposite page 18 and circle No. 332



The new Aero Commander Model 560-E is a six-seater executive aircraft with a range of 1,625 miles and a top speed of 222 mph.

Twin-engine aircraft has 1,625-mile range

A new model Aero Commander twin-engine executive airplane with a range of 1,625 miles is announced by the Aero Design & Engineering Co. The Model 560-E features an extended 49-foot high-aspect wing and has a gross weight of 6,500 pounds. It has a useful load capacity of 2,200 pounds. The aircraft seats six.

Two 295-hp Lycoming engines power the aircraft. It has a top speed of 222 mph and a cruising speed of 210 mph. The Model 560-E climbs at the rate of 1,450 fpm and has a ceiling of 22,500 feet. On one engine, it has a ceiling of 8,000 feet and a rate of climb of 300 fpm. It requires approximately 1,500 feet to clear a 50-foot-tall obstacle in landing or taking off.

For further information write to the Aero Design & Engineering Co., Box 118, Bethany, Okla., or use the Request Card at page 18. Circle No. 115.

Sealing masonry surfaces

A catalog describing several products for the sealing and repair of interior and exterior masonry surfaces is available from Standard Dry Wall Products, Inc. The catalog covers Waterplug, Quickseal, Thoroseal, Snow White, Thorite, Thorolok, and Thoroclear. Together, the products are known as the Thoro system.

Basically, the Thoro system of products is used individually or collectively to stop water leakage, seal masonry decks and walls, and provide attractive finished surfaces, both above and below grade.

The properties and characteristics of each product are described, their uses are detailed, and the proper procedures for mixing are given. Photographs are used to supplement the text explanations. A step-by-step picture story outlines the general procedure and the materials to use for the proper correction of below-grade seepage by inside application.

A section is devoted to the listing of complete specifications for the application of products in the Thoro system for the protection and repair of various types of masonry in various types of installations.

To obtain Circular No. 17 write to Standard Dry Wall Products, Inc., Box No. X, New Eagle, Pa., or use the Request Card at page 18. Circle No. 144.

RICE PUMPS

THE LINE THAT IS COMPLETE



CENTRIFUGALS

All Standard "AGC" Sizes from 1½" to 10"

- Air and Water Cooled Power
- Modern Design
- Precision Built



DIAPHRAGMS

2" - 3" - 4" Singles
Big 4" Double

- Single or Double
- Lightweight
- 48:1 reduction
- Gearing fully enclosed and operates in oil.

LIGHTWEIGHTS

1½" - 2" - 3"

- 5500 to 18,000 GPH
- Iron or Aluminum
- Powered with 4 Cycle Air-Cooled Gasoline Engines

PUMP DISTRIBUTION —
Check on the availability of the RICE LINE for your territory.



RICE PUMP & MACHINE COMPANY

328 PARK AVENUE BELGIUM, WISCONSIN

For more facts, use Reader-Reply Card opposite page 18 and circle No. 333

"We Have All the Work We Can Take Care of....."



F.T. Anderson and Son with Two of Their JOHN DEERE TRACTOR Work Units

THESE are money-making days for folks who want to be their own boss and who are properly equipped to handle general contracting work.

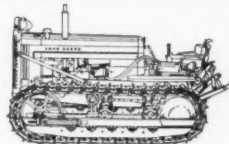
Take the F. T. Anderson and Son team of Sonoma, California, for instance. In the spring of 1955, Mr. Floyd Anderson started in the small contracting business by trading his farm machinery in on some John Deere "40" Tractors and allied working equipment. He and his son soon found that they had so much business they needed more equipment, and within a period of 8 months they had four John Deere units working in Sonoma, Napa, Marin, and Solano counties.

Mr. Anderson states: "We have all the work we can take care of. Our John Deeres are sure good tractors. They are reliable, economical to operate, and give us nothing but successful operating time. We dig everything... move anything. These tractors help us do the job better than any other make we could test, and better than others that we see on the job. Yes, sir, we sure are satisfied with our four John Deere units."

Take a tip from the Andersons—enjoy the fuller profits that can be yours with dependable, economical John Deere-powered equipment. Talk with your nearest John Deere industrial dealer. Look for his name in your phone book classified section.

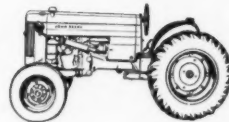
John Deere Crawler

30 h.p. high torque engine.
Highly maneuverable.
Choice of track shoes.



John Deere Utility

30 h.p. wheel-type.
Direction Reverser optional for both tractors.




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JOHN DEERE • Industrial Division
Moline, Ill. • Dept. D20J

Please send me your latest literature on the John Deere Tractors and Equipment.

Name _____
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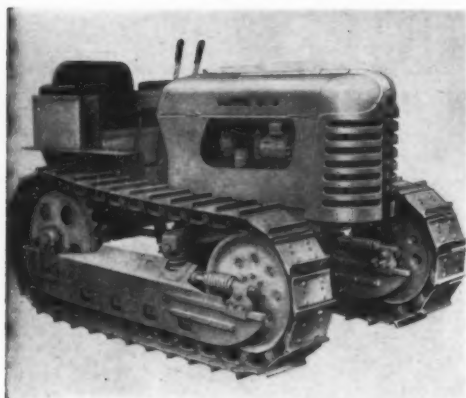
JOHN DEERE

Industrial

Tractors and Equipment

Backed by nearly
40 years of tractor
manufacture for
dependable service
and quality.

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 334



The Oliver OC-4 has a four-speed transmission with a top speed of 5.26 mph. It delivers 22 drawbar horsepower.

Speed of 22-hp crawler is 5.26 mph in 4th gear

■ A crawler tractor powered by a four-cylinder gasoline engine delivering 22 drawbar horsepower is available from The Oliver Corp. The OC-4 has a four-speed transmission which provides a speed range of from 1.56 mph in first gear to 5.26 mph in fourth gear.

The OC-4 has four lower track wheels to insure balance. Controlled differential steering assures power to both tracks at all times, the company

reports, whether traveling uphill, downhill, or on level ground.

Attachments available for the rig include a dozer blade, an angle-dozer, and many standard three-point hitch accessories such as a scraper, a scarifier, a snow-plow, and a winch.

For further information write to The Oliver Corp., 400 W. Madison St., Chicago 6, Ill., or use the Request Card that is bound in at page 18. Circle No. 17.

"We dig 34-8 ft. holes in 3 hours with our ROPER automatic hole digger"



says M. Z. Thomas, Stow, Ohio

No power take-off needed here! Just a winch and a boom and watch the Roper automatic hole digger go!

Digs 25 foot holes in six minutes. It's the fastest and ruggedest digger made and it'll be the most profitable piece of equipment you've ever owned. Interchangeable augers from 6" to 24" in diameter.

Standard 6' auger with extension available to 25'. Digs a straight or angle hole from any truck, jeep or tractor equipped with front or rear boom and winch.

Use it for soil testing, guard rail holes, etc.

Write for further information—today!



FREE—This excellent windproof lighter will be sent to you absolutely free if you'll simply jot down the name and address of your machinery supplier and send it to us. That's all there's to it, so why not do it now? Free offer expires July 31, 1957

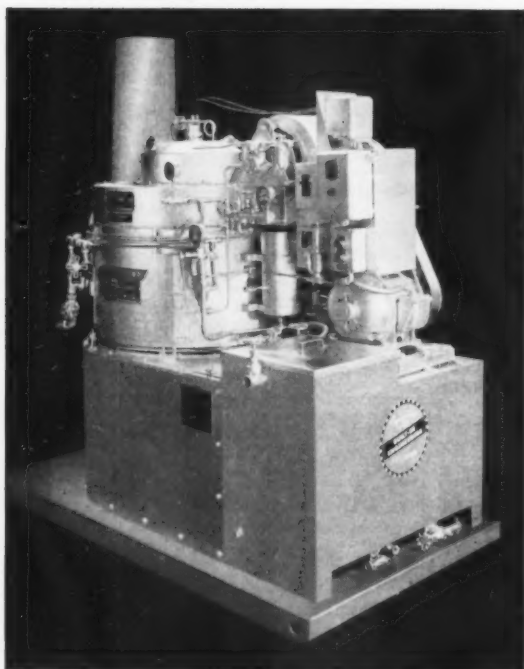


Roper Manufacturing Co.
140 ELM STREET
ZANESVILLE, OHIO

For more facts, use Reader-Reply Card opposite page 18 and circle No. 335



NEW MODEL 900 KWIK-STEAM GENERATOR!



- ★ 35 boiler hp at the touch of a switch
- ★ Completely automatic operation... burner cuts in and out as required
- ★ No steam explosion risk... approved safety controls
- ★ Small, compact, 80% efficiency

Low cost—produces 225 psi steam at 80% efficiency as you need it... when you need it. Ideal for producing winter ready mix concrete and curing concrete products. For complete information, send for bulletin 22. Littleford Bros., Inc., dept. LB 206, 485 E. Pearl St., Cincinnati 2, Ohio.

LITTLEFORD

For more facts, use Reader-Reply Card opposite page 18 and circle No. 336

Tractor-compressor

■ A bulletin entitled "No Contractor Can Afford To Be Without Self-Propelled Air Compressors" is announced by Schramm, Inc. The folder describes and illustrates the versatility of Schramm's Pneumatractor, a combination 125-cfm air compressor and wheel tractor, which can be converted from one service to the other by a button on the instrument panel.

Photographs show eighteen different ways that contractors can use the Pneumatractor, such as power shoveling, breaking out concrete, trenching, grading, rock drilling, towing, sweeping, pumping water, and plowing snow. Detailed specifications are given for both the standard Pneumatractor and the heavy Pneumatractor, including the air delivery, bore and stroke, horsepower, over-all dimensions, and weight. Available accessories are listed.

To obtain this bulletin write to Schramm, Inc., 900 East Virginia Avenue, West Chester, Pa., or use the Request Card at page 18. Circle No. 150.

Multiple compactor

■ Its vibratory multiple compactor is detailed in a folder from Jackson Vibrators, Inc. The folder gives complete details on the machine, which has a workhead consisting of six independent compacting units which can be individually as well as simultaneously operated.

Photographs and text explain how various arrangements of the vibratory compacting units can bring about the compaction of widths as narrow as 4½ feet and as wide as 13¼ feet. The operation of a single compacting unit attached to an operating handle is also discussed.

Each of the vibratory units on the Jackson multiple compactor delivers up to 4,200 2-ton blows per minute. The rig operates at speeds up to 60 fpm; maximum speed in reverse is 5½ mph. The workhead can be operated in front of the prime mover or at its side.

To obtain Form No. MC-856 write to Jackson Vibrators, Inc., Ludington, Mich., or use the Request Card that is bound in at page 18. Circle No. 140.

CONTRACTORS AND ENGINEERS



The Model 1048 all-welded steel dump body features "dirt-free" construction to eliminate accumulation of dirt and stones.

All-welded dump bodies have "dirt-free" design

■ The Model 1048, one of a new line of all-welded steel dump bodies introduced by the Daybrook Hydraulic Division of L. A. Young Spring & Wire Corp., features "dirt-free" sloping side braces, running boards, tailgate horizontal bracing, and bottom structural channel to prevent the accumulation of dirt or stone in corners, thus assuring complete unloading, the company reports.

The Model 1048 is a heavy-duty body recommended for use by contractors and excavators. A newly-designed tailgate is reported to be 50 per cent stronger with practically no increase in weight. It is equipped with hardware made from weldable cast steel. The offset top and overshot bottom design of the hardware is said to assure flexibility and dependability.

The Model 1048 is available in body lengths of from 12 to 15 feet and widths of 6, 6½, and 7 feet. Capacities range from 4 to 12 cubic yards.

For further information write to the Daybrook Hydraulic Division, L. A. Young Spring & Wire Corp., Bowling Green, Ohio, or use the Request Card at page 18, Circle No. 24.

Uses of wrought iron

■ A booklet containing a review of several highway installations in which corrosion-resistant wrought iron has been used is available from the A. M. Byers Co. Among the wrought iron products described and illustrated are drainage pipe, electrical conduit, sub-surface snow-melting systems, bridge deck plates, guard rail, and lamp posts. A section of the booklet explains the composition of wrought iron and details its characteristics.

To obtain this booklet write to the A. M. Byers Co., Clark Bldg., Pittsburgh, Pa., or use the Request Card at page 18, Circle No. 92.

American Bitumuls announces appointments

W. K. Smith has been appointed district manager in St. Louis, Mo., for the American Bitumuls & Asphalt Co., San Francisco, Calif. Smith succeeds J. S. Felter, who resigned. R. P. King replaces Smith in the firm's Mobile, Ala., office as assistant district manager. R. L. Hoover succeeds King at the Eastern Division office in Baltimore, Md.

MAY, 1957

WISCONSIN TRAILERS CHOSEN BY COMPARISON

2 to 12-ton capacity Trailers



Rugged construction, well balanced for easy hook-up, effortless maneuverability for one man, plus many other advanced engineering features. You pay less for a WISCONSIN Trailer than for other similar units.

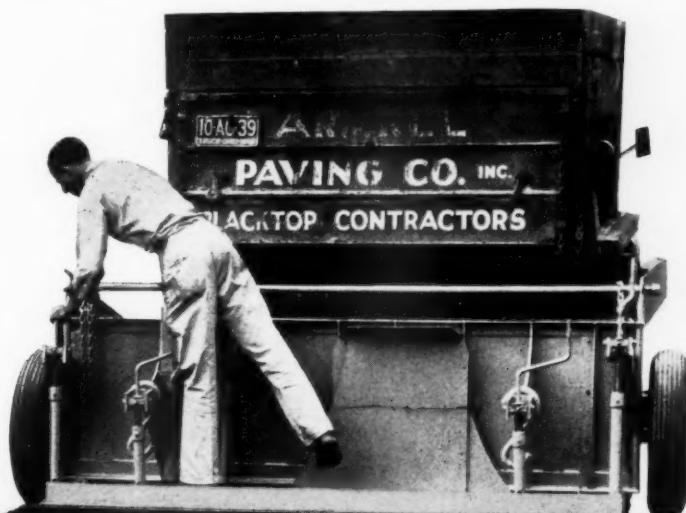
See Your WISCONSIN Trailer distributor today for more details

WISCONSIN TRAILER COMPANY 1949 N. 121 St., Milwaukee 13, Wis.
CHOSEN BY COMPARISON

For more facts, use Reader-Reply Card opposite page 18 and circle No. 337

—ADVANCED DESIGN
—LOW COST—
—TOP QUALITY
IN ALL
WISCONSIN TRAILERS

- Timken Bearings
- Budd Wheels and Hubs
- Adjustable Pintle Eye Hitch
- Reinforced Internal Braces
- Large, Heavy, Deep Frame
- Convenient Handles on Side of Tongue



LITTLEFORD

TRUE-LAY PAVER-SPREADER the only box that can produce COMPACTION like this

Littleford True-Lay is heavier to begin with . . . and is designed so that 75% of the combined weight of the unit and asphalt is brought to bear on the compaction screed. The mat is compact and dense! Hand raking is practically eliminated . . . no segregation of material.

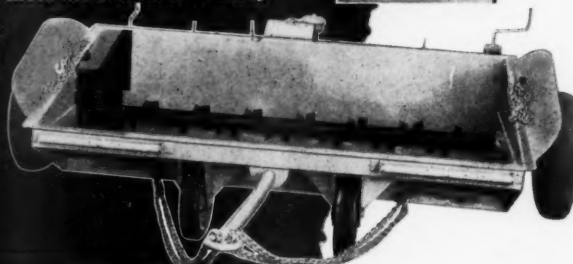
True-Lay is fast: with greater compaction, you get the roller on sooner. True-Lay is economical: reduces crew from 7-8 men to only 3: raker, shoveler and screed operator.

Operates behind standard dump truck. No special truck hitch required. Lays mat 4-ft. to 10-ft. wide, 6" in depth.

For tops in black top paving-spreading, check the Littleford True-Lay.

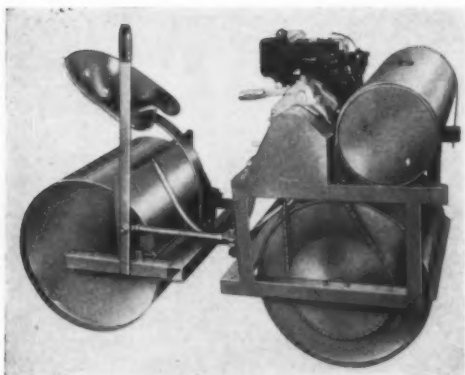
Send today for descriptive bulletin 33.
Littleford Bros., Inc., dept. LB 258—485
E. Pearl St., Cincinnati 2, Ohio.

Agitator Model available. Recommended when wide range of bituminous concrete will be used.



world's most complete line of completely engineered black top equipment

For more facts, use Reader-Reply Card opposite page 18 and circle No. 338



The Easy-Roll roller has two 24x24-inch rolls and a 15-gallon sprinkler tank. It weighs 1,475 pounds with water ballast.

**Gives a Man
Giant Strength**



CM PULLER

- **SMALL**
Lever is only 20 1/2" long.
- **POWERFUL**
83 lbs. on lever produces 3,000 lbs. at hooks. "1 1/2 ton model.
- **VERSATILE**
"CM-Alloy" flexible welded chain. Lifts or pulls at any angle.
- **PORTABLE**
Made of aluminum alloy. 3/4 ton model weighs only 14 lbs. Capacities 1/2 to 6 tons.



A NATURAL FOR CONSTRUCTION WORK!
The "CM" Puller will do a "thousand-and-one" jobs for you. It will do them faster, safer and far easier. The "puller" is compact... stores conveniently in a tool box. Lifetime lubricated. Every contractor should have one.



SEND FOR "CM" PULLER BULLETIN 146 AND NAME OF YOUR LOCAL DISTRIBUTOR.

CHISHOLM-MOORE HOIST DIVISION
COLUMBUS McKINNON CHAIN CORPORATION
TONAWANDA, NEW YORK
REGIONAL OFFICES: NEW YORK, CHICAGO, CLEVELAND
In Canada: McKinnon Columbus Chain Limited, St. Catharines, Ont.
For more facts, circle No. 339

Small asphalt roller has 15-gallon sprinkling tank

■ An all-purpose power roller for light-duty asphalt paving and similar work where a sprinkler system is required to cool or lubricate the roll surfaces is available from W. Whitney Stueck, Inc. Powered by a 3.35-hp engine, the Easy-Roll has a Snow-Nabstedt reverse gear, two 24x24 inch compaction rolls, and a 15-gallon sprinkler tank.

With water ballast the rig weighs 1,475 pounds; filled with sand, it weighs 2,015 pounds. Standard maximum speed is 280 fpm. The machine measures 64x30x43 inches.

For further information write to W. Whitney Stueck, Inc., Old Saybrook, Conn., or use the Request Card at page 18. Circle No. 11.

Universal Atlas appoints

James H. Neelan has been appointed assistant director of the advertising and public relations of the Universal Atlas Cement Co., New York, N. Y. Neelan succeeds Edwin R. Ivy, who resigned.

Neelan was formerly on the advertising staff of the U. S. Plywood Corp., and prior to that, he was with the sales promotion department of Johns-Manville Corp.

Tractor-shovel features two-cubic-yard capacity

■ A new four-wheel-drive tractor shovel with a heaped bucket capacity of more than 2 cubic yards is available from N. P. Nelson Iron Works, Inc. The Model 200 features an Allison Torqmatic full-reversing transmission and axles with planetary reduction in the wheels.

Power is supplied by either a Continental six-cylinder 117-hp gasoline engine or a GMC three-cylinder 102-hp diesel engine. The tractor-loader has three speeds forward and three reverse, with a top forward speed of 28.3 mph. Steering is with the rear

wheels of the unit.

Both the boom and the bucket hydraulic rams are double acting. The gear-type hydraulic pump is driven from an accessory drive on the transmission. The electrically-welded reservoir has a capacity of 23.4 gallons. The bucket arms are underslung so that they will not interfere with the operator's line of vision.

For further information write to N. P. Nelson Iron Works, Inc., 850 Bloomfield Ave., Clifton, N. J., or use the Request Card at page 18. Circle No. 124.



VULCAN
DGH-100
Portable
Differential-
Acting
PILE HAMMER

Put this versatile DGH-100 Hammer to work on any job you have * you'll be amazed at the number of jobs it can handle * operates on compressed air or steam * delivers a rated striking energy of 386 pounds * just over 4 feet long it is readily moved about in a jeep. Illustrated here is the DGH-100 Hammer being used with a LeRoi Tract-Air breaking concrete curbing.



Manufacturers of Pile Driving Hammers and Piling Extractors Since 1852

VULCAN IRON WORKS INC. 325 North Bell Avenue, Chicago, U.S.A.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 340

THURMAN PORTABLE SCALES...



need NO concrete pits!

MOVE EASILY FROM JOB TO JOB — SET-UP IN MINUTES



CAPACITIES: 20 to 52 tons
DECK LENGTHS: 18 to 43 ft.

Visintine and Company, one of Ohio's most experienced contractors, uses Thurman Portables for accurate, precision weighing on the site... advocate Thurman's complete steel deck construction. Low initial cost. No maintenance cost. Can be used as a PITLESS SCALE. Saves pit costs. Write today for Bulletin 601.

Other Thurman Scales: Pit • Warehouse • Industrial • Liquid Weighing • Wheelbarrow • Batching • Automatic

Precision Scales Since 1918

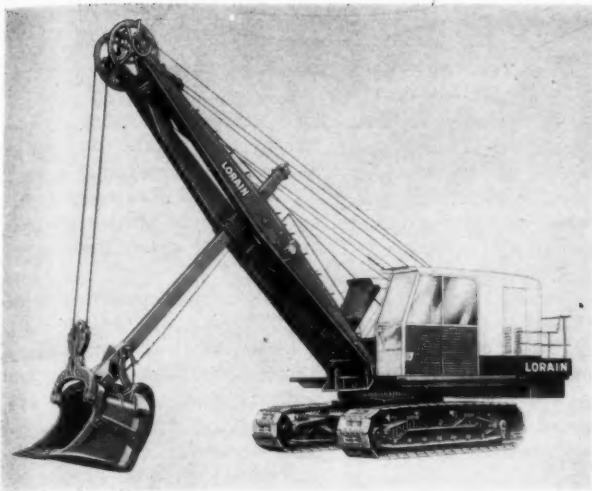
THURMAN

THURMAN SCALE COMPANY, 156 N. 5th STREET, DEPT. CO-3

COLUMBUS, OHIO

For more facts, use Reader-Reply Card opposite page 18 and circle No. 341

CONTRACTORS AND ENGINEERS



A redesigned cab featuring comfort, convenience, safety, and operating ease has been incorporated into the new Lorain 85A 2½-cubic-yard shovel-crane.

Shovel-crane features improved operator's cab

■ A new 2½-cubic-yard shovel crane incorporating a cab with improved comfort, convenience, and safety features is announced by the Thew Shovel Co. The Lorain 85A crawler has a cab with increased glass area for improved visibility in all directions and includes a sliding overhead sunshade and windows, adjustable to many combinations, the company reports.

Lorain's two-lever Joy-Stick metered air controls and Sheer-Ball mounting are two features of the 85A. The Joy-Stick controls handle all turntable operations by feeding metered air to all turntable friction clutches in any amount and at any rate. Sheer-Ball mounting eliminates all types of turntable rollers and requires no adjustment, according to the firm.

Two crawlers are available. One is 15½×12 feet and develops up to 48 tons lifting capacity; the other is 18½×13 feet wide and develops 60 tons lifting capacity. Both crawlers provide two speeds in both directions. Diesel power is provided for the 85A, with a torque converter and tailshaft governor as standard equipment.

For further information write to the Thew Shovel Co., 28th and Fulton Road, Lorain, Ohio, or use the Request Card at page 18. Circle No. 14.

COST LESS!

White vibrators cost less to buy, cost less to maintain HERE'S WHY:

- ... completely interchangeable drives and heads, no special couplings required, less spares needed for maintenance.
- ... heavier eccentric rotors in vibrator heads for better performance in concrete.
- ... power units, either gasoline engine or electric motor, interchangeable.
- ... vibrator heads, from 1½" to 3", and grinding heads interchangeable.
- ... replacement drive shafts cost less.

White MANUFACTURING COMPANY

ELKHART 9, INDIANA

MODEL ME-13, with 2½ HP electric motor 110 V. AC or DC.

MODEL M-9 with 2 HP Louson engine, automatic clutch.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 342

... you've a pat hand for PROFITS on any low slump concrete jobs, too

A The only truck mixer with SWING-IN HOPPER for FASTER NO FLASH-BACK CHARGING

A ...with HOPPER THAT SWINGS OUT-permitting FAST UNOBSTRUCTED DISCHARGE of even 0" slump concrete

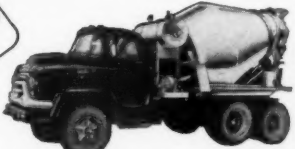
A LARGER DIAMETER DRUM HEAD-deeper blades BETTER MIXING of stiff low-slump mixes

The one truck mixer with CMC FLOATING DRIVE which eliminates troubles of ordinary rigid drives

A big share of tomorrow's business will be tied into the road building program — on jobs that call for low slump concrete.

Long famed for mixing ability, TRANSCRETES ARE A NATURAL FOR ANY LOW SLUMP JOB. When you consider all of the other advantages — quality, long life construction ... simple, more compact design ... better weight distribution ...

maximum payload ... greater maneuverability — THE LOGICAL CHOICE IS TRANSCRETE. TED (Truck Engine Drive) and Separate Engine Models to 7 yards mixing capacity.



TRANSCRETES FOR LOW COST CONCRETE

... write for these 2 FREE BULLETINS →



CONSTRUCTION MACHINERY CO., WATERLOO, IOWA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 343

Line of power units

■ An eight-page booklet describing its line of 16 power units is available from the International Harvester Co. The folder depicts the use of IH power plants with on-the-job photographs.

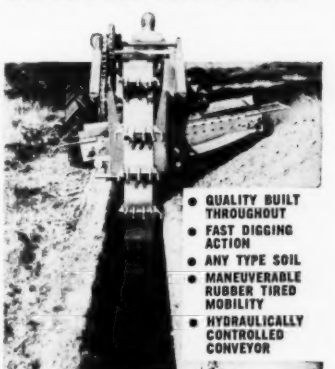
The units are shown as propelling components of various pieces of construction machinery. Brief specifications of the power unit line are given. The line includes four and six-cylinder diesel and gasoline engines.

To obtain Booklet CR-513-G write to the International Harvester Co., Construction Equipment Division, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 30 on the card.

**FASTER • DEEPER
MORE MANEUVERABLE
DIGGING EQUIPMENT
at less than
half the cost
OF COMPARABLE
MACHINERY**

The Everett[®] Trencher MODEL 60

FOR FORD OR FERGUSON TRACTORS



- QUALITY BUILT THROUGHOUT
- FAST DIGGING ACTION
- ANY TYPE SOIL
- MANEUVERABLE RUBBER TIRED MOBILITY
- HYDRAULICALLY CONTROLLED CONVEYOR

Mobile Tractor Mounted... Digs clean, smooth trenches up to 5 ft. deep, as fast as 300 feet per hour.

Here's real trench sense ... the answer to hundreds of building requests for a tractor-driven trencher that will do a big digging job at a sensible price. It's the compact, rugged, and versatile Everett Model 60 Trencher that operates from the power takeoff of the tractor — raised and lowered by built-in hydraulic system. It has the smooth operation of the wheel type trencher and the vertical advantages of the ladder type — digging close to buildings, curbs, pipes — ideal for pipeline inspection.

The Everett Trencher Model S Series Equals the Work of 25 Pick and Shovel Men

Write today about another proven **EFC** Product for Industry

EARTH EQUIPMENT CORPORATION CGE
2036 Sacramento St., Los Angeles 21, Calif.
☐ Please send full information on new Model 60 Everett Trencher
☐ Please send full information on new Model S Everett Trencher
NAME _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

For more facts, use coupon or circle No. 344





Largest of the Rocket line of mixers is this Model 65, rated at 6½ cubic yards for mixing and at 9 cubic yards for agitating.

Mixer's extension chute hydraulically controlled

■ A line of seven transit mixers that feature hydraulically controlled aluminum extension chutes is available from the Concrete Transport Mixer Co. The Rocket mixer is offered in NRMCA-approved mixer capacities of 3, 3½, 4½, 5½, and 6½ cubic yards. In every case, the manufacturer guarantees a capacity ½ cubic yard more than the NRMCA-approved rating.

The 3 and 3½-cubic-yard mixers are available with either four or six-cylinder engines. On all models, the operating controls are grouped at the rear for positive discharge control and accurate placement. The drum is powered by the customer's choice of

industrial engine through a truck-type transmission and a differential right-angle reduction unit. A chain drive transmits the power to the mixer. It is not affected by truck twist or road shock, the company states.

The Rocket's open-end loading feature reportedly permits faster charging through the unobstructed hopper. The open end eliminates the drum seal. The truck operator can drive over ruts and through open fields carrying the mixer's full capacity without spillage, provided proper consistency control is maintained, the company states. For handling specification work, the Rocket is equipped with an electrically-operated jam-proof revolution counter.

For further information write to the Concrete Transport Mixer Co., 4985 Fyler Ave., St. Louis 9, Mo., or use the Request Card at page 18. Circle No. 129.



This Bucyrus-Erie 1½-yd. 38-B shovel loads rock at the base of Mt. Franklin in El Paso, Tex. It is owned by Standard Aggregates Co., El Paso.

Bucyrus-Eries Keep Things Moving on Major Highway Jobs

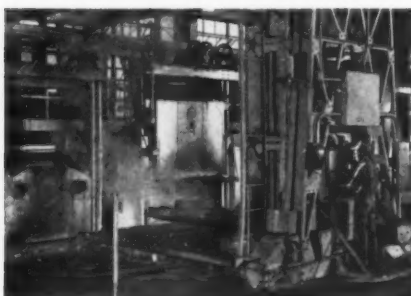
On highway projects in state after state Bucyrus-Eries are the backbone of the machinery fleet. When the going gets rough, when machine maintenance becomes a problem, Bucyrus-Eries furnish the necessary dependability to keep things moving at a steady clip.

Many of their steel parts, for instance, are cast in Bucyrus-Erie's own foundries under rigid quality control; this accounts for the ruggedness that minimizes maintenance time. Fewer working parts combined through superior design enable Bucyrus-Eries to deliver highest output week in and week out.

These moneymakers are available in a complete line of crawler-mounted models from ¾ to 4 cubic yards (including the new 1-yd. 30-B) and in rubber tired carrier mounted Transit Cranes in 15-, 25-, and 35-ton capacity. Models through 4 cu. yds. are readily convertible to crane, clamshell, and dragline, plus dragshovel on machines through 2½ cu. yds. For lighter crane work, there are 5-ton and 10-ton capacity Hydrocranes.

Your Bucyrus-Erie distributor will be glad to give you information on the size machine that fits your requirements. See him today.

333E57



Bonus Quality

Many gears, pinions, driving tumblers, shaftings, and other parts that go into Bucyrus-Eries are heat-treated in electric furnaces for specified degrees of toughness and hardness. The steel castings are poured in Bucyrus-Erie's own furnaces so they can be held to highest standards at every stage of development.



South Milwaukee
Wisconsin



In construction of the Boston Southeast Expressway, this Bucyrus-Erie 3-yd. 71-B shovel loads trucks with granite, rock and dirt. Marinucci Bros. & Co., Inc., Boston, is the owner of this machine.



P. T. & L. Construction Co., Paramus, N.J., used this Bucyrus-Erie 2-yd. 51-B shovel to cut down high ground for fill to be used for the Garden State Parkway in New Jersey.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 345

Chip-sealing machine

■ The self-propelled Spread-Master power spreader is described in a brochure from Flaherty Mfg., Inc. The rig is used for chip sealing and pulls the truck supplying the chips backward, out of gear.

The bulletin lists, explains, and illustrates such features of the Spread-Master as its built-in cutoff gates which permit spreads of from 6 inches to 13 feet and its midship shuttle-gear transmission with five speeds forward and one reverse. Specifications for the rig are given, as well as a description of the Minneapolis-Moline 57-hp engine which powers it.

To obtain this brochure write to Flaherty Mfg., Inc., P. O. Box 1042, Pocatello, Idaho, or use the Request Card at page 18. Circle No. 135.

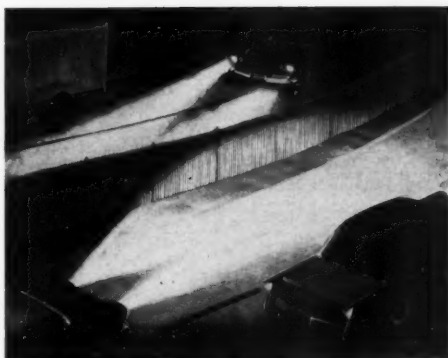
**for
Wet Job
"Headaches"**

Consult with Griffin's
engineers.
Ground water analysis
and pre-bid estimate
—no obligation.

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

For more facts, circle No. 346
CONTRACTORS AND ENGINEERS

The Glare-Guard safety fence for center-strip installation on divided highways provides against the glare of oncoming headlights.



Center-strip safety fence prevents headlight glare

■ A highway safety fence for use along the center strip of divided highways is available from Habitant Fence, Inc. The Glare-Guard fence is said to prevent headlight glare from shining into the eyes of oncoming drivers when installed at heights properly engineered to the slopes and curves of the highway.

The fence is constructed of full-round cedar logs of varying heights and is assembled on horizontal steel pipe rails with galvanized steel posts set in concrete as vertical supports. According to the company, the cedar logs resist impact while at the same time giving enough of a cushioning effect to prevent a vehicle from bouncing back into the travel lanes.

For further information write to Habitant Fence, Inc., Highway Division, Bay City, Mich., or use the Request Card at page 18. Circle No. 4.

Metal roof construction

■ A catalog giving technical data, construction and erection details, and specifications for Truscon Ferrobord metal roof decking is available from the Truscon Steel Division of the Republic Steel Corp.

A detailed description of Ferrobord Steeldeck roofs is given. Tables show safe loading calculations for various gage Ferrobord used over various spans. The use of inverted Ferrobord as forming for the construction of reinforced-concrete decks is explained, and a table shows recommended maximum clear spans for inverted Ferrobord to support wet concrete of various thicknesses.

To obtain Catalog K-120 write to the Truscon Steel Division, Republic Steel Corp., Youngstown 1, Ohio, or use the Request Card at page 18. Circle No. 89.

Steel forms for concrete

■ Details and illustrations covering its line of Metaform curb and gutter, road, building, and circular tank form systems are contained in a new booklet from the Metal Form Corp.

Each system of forms is explained and illustrated with drawings and photographs. On-the-job photographs show the various form systems set up on construction projects.

To obtain this booklet write to the Metal Forms Corp., 3334 N. Booth St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 88.

Asphalt plant described in literature

■ A circular describing its new Model L-10 asphalt plant is available from the White Mfg. Co. The plant, available as a portable or stationary unit, has a capacity of 20 tons of hot mix per hour.

The circular gives complete specifications for the plant, as well as all its dimensions. Photographs illustrate typical portable and stationary installations. A detailed explanation of the Model L-10's low operating costs is given.

The asphalt plant can be put into operation in 30 minutes, the company reports. It has a batch-type 1,000-pound pug mixer with air-controlled gates. It has a built-in asphalt heating kettle and a reciprocating plate aggregate feeder. Power is supplied by either a 50-hp engine or a 30-hp electric motor.

To obtain Circular No. 47 write to the White Mfg. Co., 1227 W. Beardsley Ave., Elkhart, Ind., or use the Request Card at page 18. Circle No. 130.



HERE'S LOADER MOBILITY... EXCAVATING STRENGTH

LOADS 1½ CU YD AT A PASS . . . 2¼ yd with light materials bucket. Lifts up to 11,200 lb.

WORKS RIGHT UP ON A STOCKPILE where wheels dig in. Can build stockpiles higher, store many more yards of material in a given area.

TURN IN ITS TRACKS . . . where many smaller loaders have to jockey.

DIGS INTO HARD-PACKED MATERIAL . . . exerts 20,000-lb break-out force, with 72 net engine hp and modern bucket design.

These are just four examples of how an Allis-Chalmers HD-6G tractor shovel offers a combination of strength, traction, flotation and mobility that enables it to replace a fleet of part-time specialized machines. You can count on it to boost production the year round. Ask your Allis-Chalmers dealer about the HD-6G . . . also the three larger tractor shovels with capacities up to 4 cu yd. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

Engineering in Action

For more facts, use Reader-Reply Card opposite page 18 and circle No. 347



Drills work only three-fourths of the bench so that a protective wall is formed next to the rail line. Three Gardner-Denver Air Tracs, powered by two Ingersoll-Rand 600 air compressors feeding an air receiver, sink 24-foot holes for the lift.



Rock blasted from an outcrop goes to a Euclid 12-yard rear-dump that will deposit the material in a fill. The 2½-yard shovel supplemented three larger rigs handling rock, roadway, and borrow material.

Rock and peat removal are a big part of turnpike project

Scrapers, drilling and blasting crews work to prevent blockage of railroad track next to 140-foot-deep and 115-foot-wide cut

by ANTHONY N. MAVROUDIS, field editor

More than 680,000 cubic yards of rock, concentrated largely in a cut over 140 feet deep and 115 feet wide, formed one of the many obstacles in the construction of a 6-mile stretch of the Connecticut Turnpike. The removal of 300,000 yards of peat muck—200,000 yards of it in one area alone—made for more difficulty on this section for M. A. Gammino Construction Co., Providence, R. I.

Precise work

Working under an \$8,300,000 contract, Gammino is building a stretch

located at the mid-point of the pike, which runs from the New York state line near Greenwich, Conn., to the Rhode Island line, where the artery will tie into U. S. 6.

The largest of the rock cuts on this job was located adjacent to the tracks of the New Haven Railroad between East Haven and Branford, and the crews had to use extra care to prevent any blasted rock from falling on the tracks. The work, under drilling and blasting foreman Lou Gerrety and project manager Jack Ramos, was also scheduled and carried out at



At this location, 200,000 yards of peat muck, reaching a depth of 40 feet, is being excavated for the roadway. Rock and earth roadway excavation is dumped at the edge of the area from a Euclid as a Manitowoc dragline excavates the muck.



Backfill is pushed into the peat muck bed by the bulldozer blade of a Cat D8 tractor. A Manitowoc Speed-crane with 120-foot boom and 5-yard dragline bucket sidecasts the soupy material.



A Caterpillar D9 tractor push-loads a DW21 scraper to capacity during work on the 2 million yards of roadway excavation. Gammino has a fleet of the scrapers working on this phase of the project.

times when no trains were due in the area. Railroad personnel cooperated with the contractor's blasting crew throughout the work.

Caterpillar D-8 dozers started off this tricky phase of the rock removal, cutting off the top two 24-foot lifts of the cut and pushing the weather-beaten rock of the outcrop to the sides. A shovel picked up this material and loaded it to Euclid rear-dumps that hauled to the various fills.

Once the top two lifts had been removed, drillers started by sinking 3-inch holes to a 24-foot depth on a 6x6-foot pattern. The contractor used a fleet of fifteen Worthington, Ingersoll-Rand, and Gardner-Denver wagon drills, together with three Gardner-Denver Air Tracs—all equipped with carbide insert bits. The drills were powered by three Ingersoll-Rand 600 air compressors that fed into a receiver tank. This tank had a 250-foot-long, 6-inch-diameter air line with multiple connections for the rubber lines feeding the drills. As succeeding benches were drilled, the pneumatic lines were re-connected to lower outlets on the 250-foot air line. In this way, the original compressor-receiver setup was maintained at all times at the top of the rock cut.

After the third lift had been drilled, then blasted with Du Pont millisecond delays and American Cyanamid 40 per cent gelatin, Gammino began forming the outside protective lip at each bench. Crews did this by drilling only three-fourths of the width of the bench, leaving a 24-foot-high outside wall.

Once the shovel and dump-truck team cleared the blasted rock from the bench, the protective wall was drilled and blasted in toward the benched area that had been formed. In this way the contractor prevented any rock from falling on the tracks.

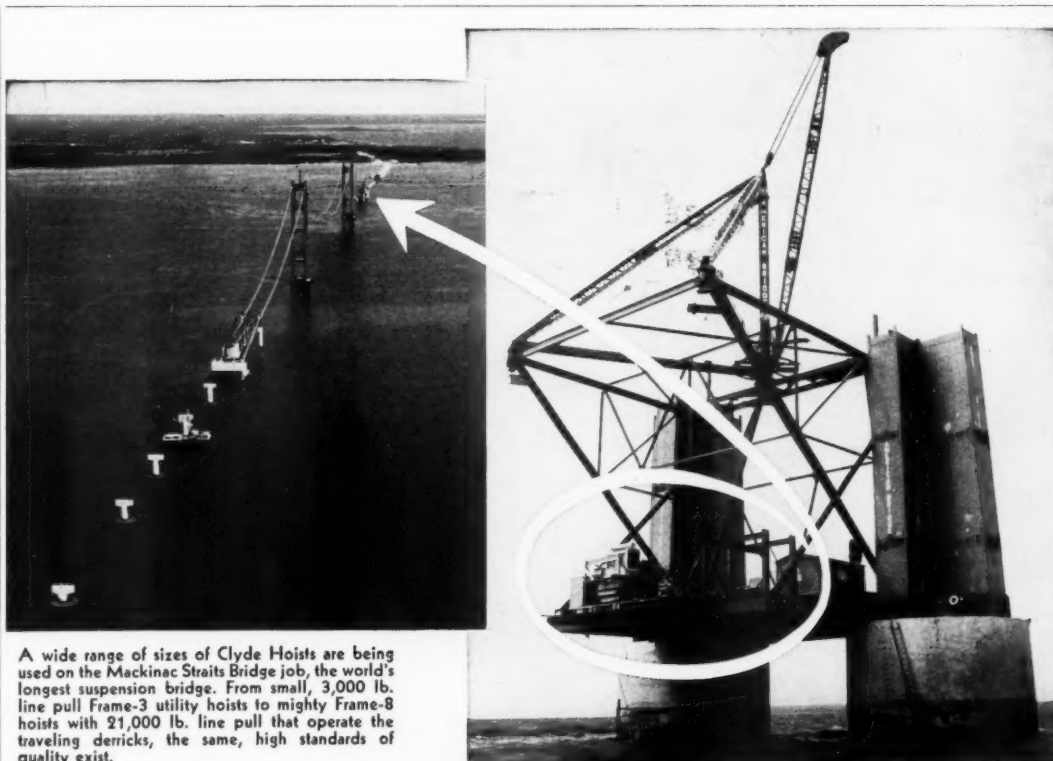
After 90 feet of rock had been removed, Gammino revised the 6x6-foot drilling pattern and completed the remaining depth with an 8x8-foot pattern. The secondary phase was handled by the three Gardner-Denver Air-Tracs powered by two Ingersoll-Rand 600 air compressors feeding an air receiver. These 24-foot deep holes were loaded with Du Pont 65 per cent Gelex No. 1 dynamite and blasted with Du Pont millisecond delay blasting caps. A Du Pont 1,200-cap condenser-discharge-type blasting device activated all detonations. This phase of drilling and blasting was done in the same manner as the first—a protective wall being formed along the outer face of the cut at the initial stage of excavation. During this operation, crews averaged 1 cubic yard of rock for every half pound of explosive.

Roadway excavation

The job of moving more than 2,000,000 cubic yards of roadway excavation, together with 300,000 yards of borrow—now in its last stage—is being handled by a huge fleet of

(Continued on next page)

One of three P&H 1055 cranes with a 3½-yard dipper works on the roadway excavation, loading material to a Euclid 14-yard rear-dump. A total of 14 "Eucs" kept the shovels busy.



A wide range of sizes of Clyde Hoists are being used on the Mackinac Straits Bridge job, the world's longest suspension bridge. From small, 3,000 lb. line pull Frame-3 utility hoists to mighty Frame-8 hoists with 21,000 lb. line pull that operate the traveling derricks, the same, high standards of quality exist.

CLYDES HANDLE CONSTRUCTION MATERIAL ON WORLD'S LONGEST BRIDGE!

From the first preliminary engineering sketch to the traditional ribbon cutting ceremony that will open the Mackinac Straits Bridge to traffic, quality is a predominating factor. Quality in engineering . . . in workmanship . . . in materials and equipment is a necessity for the successful completion of any construction project.

For the utmost quality in hoisting equipment, Clydes are your best bet. Clyde hoists offer more design advantages than any other hoist in the field . . . advantages that assure safer, easier and more economical operation. Advantages that mean long life dependability and stamina for uninterrupted service, job after job, year after year.

Why not write for bulletins and find out for yourself why Clyde hoists excel?



CHECK THESE QUALITY FEATURES—

- Ball and roller bearings throughout reduce maintenance and power costs.
- Lock-in, lock-out pawls afford safer load handling.
- Internal, expanding band friction clutches give smooth, fatigue-free operation.
- Chain tightener permits fast, simple adjustment without removing guard.
- Easily actuated, generous size brakes assure positive, accurate load control.

HOISTS • DERRICKS • WHIRLEYS • BUILDERS TOWERS • CAR PULLERS • UNLOADERS • ROLLERS



CLYDE IRON WORKS, INC.
Established in 1899
DULUTH 1, MINNESOTA



For more facts, use Reader-Reply Card opposite page 18 and circle No. 348



This Armco 40x80-foot metal building, housing Gammino's job site maintenance shop, is completely equipped for the complete overhaul of all equipment but the P&H 1055's.

(Continued from preceding page)

earthmoving rigs. Three P&H 1055 3½-yard shovels and one 2½-yard rig load 14 Euclid rear-dumps and three Euclid bottom-dumps with the roadway and borrow excavation. Four Caterpillar DW21 scrapers and two LeTourneau scrapers, pulled by Cat D8 tractors, average about 3,000 cubic yards of roadway excavation every 10-hour day. The four shovels, handling the rock, roadway, and borrow material, average about 12,000 cubic yards per day.

Peat removal

One difficulty in the initial phase of roadway excavation was the removal of over 300,000 cubic yards of peat muck found at various locations

along the job. One spot alone contained over 200,000 yards of peat muck that went about 40 feet deep. This material was removed by a Manitowoc Speedcrane equipped with a 120-foot boom and a 5-yard dragline bucket. With this long boom, the crane operator was able to side-cast all the muck while Euclid 12 and 14-yard rear-dumps delivered the rock and earth backfill that was pushed out into the soupy material by a Caterpillar D8 tractor with dozer. A total of ten Cat tractors, nine D8's and one D9, are being used to shape the various cuts and fills along the 6-mile contract. Other equipment worked on the stretch included a Marlow 4-inch pump that was to dewater wet areas, a Lorain truck-crane that worked around the 15 bridge structures of the job, and a 1¼-yard dragline crane that removed the smaller areas of peat muck.

Job-site maintenance

A centrally located maintenance shop, set up because of the job's distance from the home office in Providence, handles most of the repair work on the huge equipment fleet. The operation is neatly housed in an Armco 40x80-foot metal building equipped to handle complete mechanical overhauls of all but the P&H 1055 rigs.

Large enough to house three Euclid bottom or rear-dumps and three 600 air compressors at a time, the building is staffed by three mechanics and a master mechanic. Spare parts, such as clutches and generators, are stocked for every type and make of equipment on the job so that complete units can be removed from equipment and replaced immediately to reduce downtime.

An A-frame in the shop allows mechanics to pull a complete engine from a piece of equipment and replace it with either of the spare engines—a Cummins and a GMC—kept ready for this purpose. Complete replacement of entire engines has also reduced downtime and made it possible for mechanics to work on faulty engines during slack periods of the day. It takes two mechanics about six hours to replace a clutch for a Cat D8 or a Euclid. Welding requirements in the shop are handled by two Hobart 300-amp units.

Lubrication of the equipment is done with a Chevrolet truck carrying eight Alemite reels—one for crawler-track lube, two for chassis lubrication, one for transmission lube, three for various oils, and one for air. Air is supplied by a Worthington compressor mounted on the truck bed. Texaco lubricants are being exclusively used on this project.

A heavy-duty fleet truck, operated by Rhode Island Tire Co., Providence, R. I., handles all the tire repairs. Damaged tires are replaced with Goodyear tires, and ordinary flat tires are repaired at the maintenance shop. Tires needing major repairs are sent to the company's office in Providence.

The master mechanic, Norman T. Sullivan, has set up preventive main-

Ready to roll, closer control!

delivers 4300 lbs. of 99% dry steam in 30 min. from a cold start



Displayed at the ROAD SHOW
Chicago International Amphitheater
January 28, 1957



- For pile driving or extracting concrete, steel or wood piles.
- Provides steam for heating asphalt or ready-mix, winter thawing, cleaning of equipment, heating buildings.
- PS-125 skid-mounted model easily transported job-to-job.
- Costs less to run—has closest control known for pile driving.

EASY TO START, convenient to operate, quick to service

NEW Cleaver-Brooks 125-hp PORTABLE STEAMER

easily towed anywhere by truck or tractor

Wherever you need BIG STEAM CAPACITY—roll in the PSM-125. This self-contained boiler plant on wheels can be dispatched anywhere . . . delivers full output in 30 min. Carries its own fuel supply—132 gals. of No. 2 oil in fender tanks.

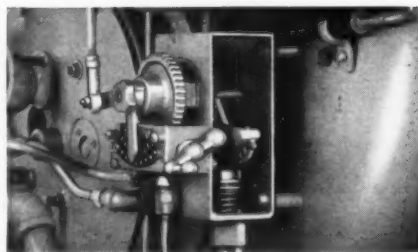
With 99% dry steam, single and double acting pile-driving hammers maintain full rating in maximum number of blows per cycle. Rig maintains pressure continuously . . . delivers on demand, in direct proportion to the load. Plenty of reserve capacity for all hammer sizes.

PSM-125 and PS-125 (skid-mounted) units are all-weather protected and glass-fibre insulated. Rugged, welded-frame construction resists impact. Boiler built to same high standards as Cleaver-Brooks industrial boilers, fully fire-tested at the factory.



TODAY — write for complete data, including specifications. Ask for copy of catalog AD-159.

CLEAVER-BROOKS COMPANY
Dept. F, 397 E. Keefe Ave.,
Milwaukee, Wisconsin



ONE CONTROL MATCHES FIRE TO THE LOAD— from low to full fire for all steam demands.

Cleaver Brooks

PIONEERS OF SELF-CONTAINED BOILERS, PORTABLE STEAMERS, BITUMINOUS BOOSTERS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 349



The unstable peat material spills from the dragline bucket, which has been swung over a waste area. The huge rig was able to excavate the entire 200,000 yards of the muck in this area by side-casting.

tenance schedules to keep equipment on the line. The torquematic fluid of the Euclid and shovel rigs is replaced after every 500 hours of operation, and oil filters are changed after 120 hours of use. The latter figure is variable, of course, but 120 hours is held as a maximum. Filters are changed earlier on dozers that have been working in extremely dusty areas. Oilers are stationed at each of the shovels, cranes, and draglines and have the responsibility of lubricating the entire rig every day. Two fuel trucks, an International 750-gallon and a Chevrolet 500-gallon, patrol the project and supply all the equipment with diesel fuel.

Two 4,000-gallon tanks, embedded in the ground in front of the maintenance shop, are used to store the diesel fuel. A third tank, with a 2,000-gallon limit, holds gasoline for the various pickups used by the contractor. All gasoline and diesel fuels are Socony-Vacuum products.

Scheduled for completion this fall, the 6-mile contract is unique in that it straddles the point where there is a change in pavement construction. Asphaltic-concrete will be used on the eastern 3 miles of the contract length and cement concrete on the western 3 miles. Half the length of the 129-mile turnpike, beginning at the New York state line, will be topped with asphaltic-concrete to a point located mid-way along Gammino's contract. The remaining length of the turnpike, to the Rhode Island state line, will be cement concrete. Before paving starts, the contractor is planning to set up a concrete batch plant to supply the cement concrete and to purchase the asphaltic-concrete for the blacktop paving.

THE END

Black & Decker subsidiary purchases Canadian plant

Black & Decker Mfg. Co., Ltd., of Toronto, Canada, has purchased a Canadian manufacturing plant in Brockville, Ontario. The company is a subsidiary of the Black & Decker Mfg. Co., Towson, Md.

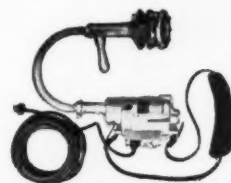
The Brockville plant, located 130 miles west of Montreal near the St. Lawrence River, has a 58,000-square-foot area. Manufacturing operations will include motor winding and assembly of portable electric tools. Eventually the plant will expand its manufacturing facilities.



Model H-8 and H-10 (above). Gasoline powered unit especially designed for surfacing concrete highways, runways, streets, floors. Includes exclusive power take-off for attaching "BERG" flexible shaft surfacing equipment. Model A (right) is lightweight, electric powered unit that suspends from operator's shoulder. Equipped with interchangeable heads and attachments for surfacing bridges, buildings, dams, culvert, walls or similar surfaces. Wire or write for details.

"BERG" CONCRETE SURFACERS

for: bridges, highways, airport runways, dams, culvert, floors, walls.

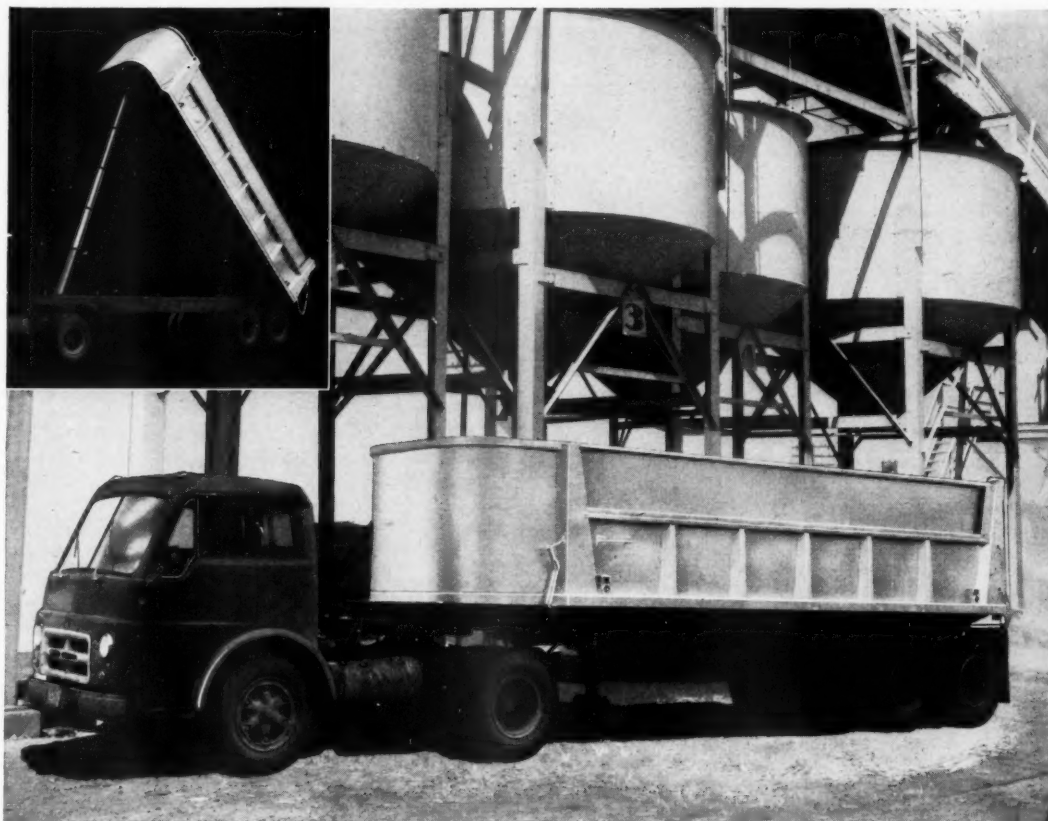


CONCRETE SURFACING MACHINERY CO.

4665 Spring Grove Avenue

Cincinnati 32, Ohio

For more facts, use Reader-Reply Card opposite page 18 and circle No. 350



Model STM, with Uni-scope hoist and 26 ft., 30 cu. yd. body is ideal for economical bulk hauling. Galion design saves weight... hoist, body and chassis form closed triangle for maximum stability when dumping.

GALION TRAILER DUMPS

haul more... earn more with every load!

There's a model in Galion's trailer dump line *exactly* suited to your loads and the axle weight limitations in your locality. You'll find that you can select a Galion trailer dump custom-engineered for ideal weight distribution on *your* job... one that will enable you to haul extra profit-making payloads *legally*.

And, Galions are safer, too! They provide unexcelled stability, both on the highway and when dumping. All wheels remain on the ground as the body raises... stresses are evenly distributed throughout the running gear. What's more, Galion's lightweight yet rigid body-hoist-chassis combination eliminates twisting — a common cause of dumping upsets!

Your Galion distributor offers a full choice of trailer dump body, hoist, chassis and running gear types and capacities. Ask him to show you how you can haul more... earn more with Galions.

AA-5488



MODEL 5SM—Best where local weight laws allow high individual axle weight limits, but relatively low gross weight limit.



MODEL STM—For use where weight laws allow credit for only one set of tandem axles, with medium gross weight limit.



MODEL TTM—Used in those areas where highway weight limit laws allow maximum credit for two sets of tandem axles.



MODEL HH—Ideal where laws permit "trains" and require maximum axle spacing for greatest gross weight allowance.

more payload... more profits with Galion!

GALION ALLSTEEL BODY COMPANY • GALION, OHIO



For more facts, use Reader-Reply Card opposite page 18 and circle No. 351

manufacturer memos



W. E. Putz, administrative assistant to the vice president and director of sales of the Barber-Greene Co.

Barber-Greene names Putz to new company post

W. E. Putz has been promoted to administrative assistant to the vice



Charles E. Parkin, succeeding Putz as advertising manager for the Barber-Greene Co.

president and director of sales of the Barber-Greene Co., Aurora, Ill. Putz, formerly the firm's advertising manager, is succeeded by Charles E. Parkin.

In his new position as administrative assistant, Putz will coordinate the company's technical services division, which covers the service, traffic, repair, parts stocking, and parts book departments.

A former copy editor of the Indianapolis "News", Parkin joined the Barber-Greene firm in 1950, and has held many positions in the advertising department, including that of technical editor.

Three join board of McKiernan-Terry Corp.

Robert M. Fortune, Herbert G. Dillon, and Frank W. Hamilton, have been named to the Board of Directors of the McKiernan-Terry Corp. Fortune is vice president in charge of special equipment and calendar roll sales. Dillon is vice president in charge of sales for the Mead-Morrison Division of McKiernan-Terry. Hamilton is works manager of the Mc-K plant at Dover, N. J.



I. J. Harvey, Jr., chairman of the board and chief executive officer of the Flintkote Co.

Flintkote elects president and chairman of the board

Perce C. Rowe was elected president and chief administrative officer and I. J. Harvey, Jr., was made chairman of the board and chief executive officer of the Flintkote Co., New York, N. Y.



Perce C. Rowe, president and chief administrative officer of the Flintkote Co.

Rowe, a member of the company for the past 28 years, served as chairman of the executive committee of the asphalt and tarred roofing industry war council during World War II, and as a member of the advisory committee of the building materials branch on the War Production Board.

Harvey joined the firm in 1930 as vice president in charge of road activities, and eventually all sales activities. Four years later he was elected president and director. He is also a member of the executive and finance committees of Flintkote.

Heltzel appoints Wass

Joseph J. Wass has been appointed assistant to the manager of manufacturing of the Heltzel Steel Form & Iron Co., Warren, Ohio. In his new position, Wass will be responsible for all phases of the firm's production, including inventory, purchasing, and scheduling.

Wass is a past president of the Mahoning Valley Society of Professional Engineers and a member of the American Welding Society and the Ohio Society of Professional Engineers.



John D. Grayson, controller of the J. I. Case Co.

Case names controller

John D. Grayson has been named controller of the J. I. Case Co., Racine, Wis., responsible for accounting and other functions falling within the scope of the controller's position.

Grayson, former president of the New York control of the the Controllers Institute of America, was vice president and treasurer of the American Tractor Corp., Churubusco, Ind.



This roller, hardfaced with Victor Alloy, shows practically no wear after crushing 40 tons of rock hourly, 8 hours daily for 30 days.

HOW TO SAVE ON ROLLERS AND RODUse VICTOR Hardfacing

• FREE •

Victor Hardfacing Manual shows you right rod to use and how to apply it. Write us NOW for your copy.

Profitable dealerships open; inquire now!

VICTOR

for hardfacing

VICTOR EQUIPMENT COMPANY

ALLOY ROD AND METAL DIVISION

13808 E. Imperial Highway, Norwalk, Calif. • Wakita, Oklahoma

For more facts, use Reader-Reply Card opposite page 18 and circle No. 352

Elmer A. Trask, Cleveland district manager of the wire rope and aircord division of John A. Roebling's Sons Corp.



Roebling's Sons promotes

Elmer A. Trask has been appointed Cleveland district manager of the wire rope and aircord division of John A. Roebling's Sons Corp., Trenton, N. J. Trask will cover Ohio, and sections of Michigan, West Virginia, Pennsylvania, and western New York. He succeeds Earl A. Frazier, now the head of the wire rope and aircord sales in the New York district office.

Miller to handle sales for Gar Wood Industries

Ross Miller, sales manager for Gar Wood Industries, Inc.



Ross Miller has been named sales manager for the line of dump truck bodies and hoists manufactured by Gar Wood Industries, Inc., Wayne, Mich. Miller will coordinate and supervise all sales activities.

He has been with Gar Wood Industries since 1920, in such positions as national service manager, etc.

Raymond E. Burton, assistant director of marketing for the Koehring Co.



Koehring appoints Burton

Raymond E. Burton has been named assistant director of marketing for the Koehring Co., Milwaukee, Wis. In his new position Burton will cover market research and analysis.

Burton joined the Koehring organization as a draftsman at the C. S. Johnson Co., Champaign, Ill., in 1948. Four years later he was transferred to Tokyo as the firm's representative

for Ishikawajoma-Koehring Ltd., producer of Koehring equipment for the Asian area. He returned in 1955 to assume the post of assistant sales manager.

Universal Atlas appoints Tomlinson sales manager

Wilbur M. Tomlinson has been appointed sales manager of the Kansas City, Mo., territory of Universal Atlas Cement Co., New York, N. Y. Tomlinson, who succeeds the late Harold J. Layden, joined the firm in 1928 as a sales representative. In 1953 he was promoted assistant sales manager at Kansas City, a position he held up to the time of his new appointment as manager.



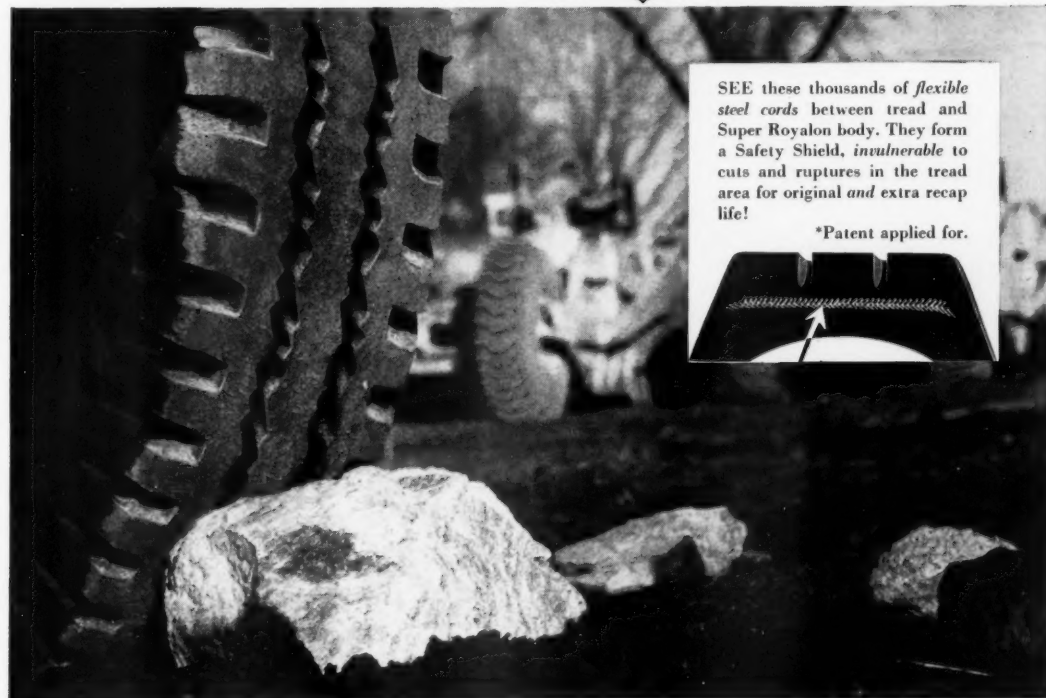
C. F. Anderson, sales manager of the Paving Equipment Division, Jaeger Machine Co.

Jaeger names Anderson division sales manager

C. E. Anderson has been appointed sales manager of the Paving Equipment Division, Jaeger Machine Co., Columbus, Ohio. He will make his headquarters in the firm's home office, but will spend much of his time in the field.

Anderson has supervised construction of sections of the New Jersey and West Virginia turnpikes, the New York Thruway, and many other highways. He also served in the same capacity for air base paving in Europe and Africa, and made physical surveys in Spain and Thailand.

Keep the job GOING with exclusive SAFETY *STEEL* SHIELD*



SEE these thousands of flexible steel cords between tread and Super Royalon body. They form a Safety Shield, invulnerable to cuts and ruptures in the tread area for original and extra recap life!

*Patent applied for.



U. S. ROYAL *Super* FLEETMASTER

For graders, scrapers, heavy off-the-road equipment—

U.S. ROYAL CON-TRAK-TOR



● Triple Impact Protection—added rubber between plies, double shock-pads, extra-tough construction at the crown.

● Full-Lug Traction—massive beefed-up lugs extend from shoulder to shoulder, take hold and pull where others slip and spin!

Don't let tire failure hold up your job. Put your trucks on the new U. S. Royal Super Fleetmaster. Its Safety Steel Shield is so immune to hazards that it runs over jagged rocks, even over razor-sharp axblades without losing a pound of air!

This tire's *all-new*—with money-saving advances throughout its construction. It's *all-wheel*—built for every on-and-off-the-road truck exposed to heavy impacts in murderous terrain.

Your U. S. Royal Dealer now has the Super Fleetmaster in sizes through 11.00. Call him today—and specify "Super Fleetmaster" when you buy your new equipment!



United States Rubber

Rockefeller Center, New York 20, N. Y.

In Canada: Dominion Rubber Co., Ltd.

See things you never saw before. Visit U. S. Rubber's new Exhibit Hall, Rockefeller Center, N. Y.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 354

20 POWER POCKET MICROSCOPE

- Magnifies 400 times
- 4 Precision ground lenses
- Always in focus
- Rugged metal with pocket clip
- Satisfaction guaranteed

For engineers, contractors, inspectors, quarrymen, instructors and students making accurate on-the-job inspection of metals, welds, ore, stone. Hundreds of uses.

A Precision Instrument

4-in. x 1/2-in.

\$365
Post-paid



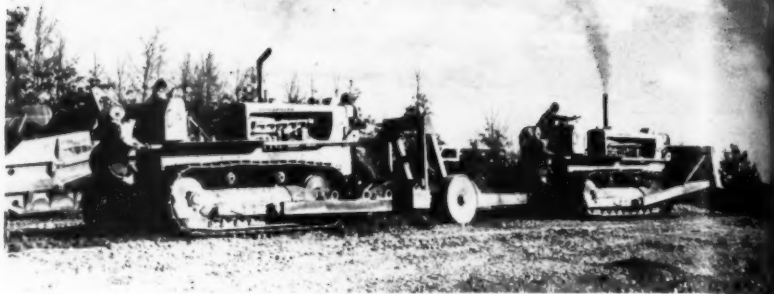
INDUSTRIAL OVERLAY METALS, INC.
EATON, OHIO

For more facts, circle No. 353

Rippers tackle tough highway grading job



A welder uses a Lincoln Faceweld 12 electrode to hardface the manganese steel points of an Esco tooth for the rough ripping assignment.



A Cat D8 push-dozor assists another D8 that pulls the one-hook Cat ripper through the rocky soil. This operation was done whenever the push-tractor was not needed to assist a scraper.

Ripper teeth lasted about as long as a short beer on a hot afternoon as ripper and scraper teams cut their way through the semi-rock excavation on the U. S. 86 relocation in southern Missouri.

Even after the manganese steel points had been faced with hard-rod, and the two 6-inch pieces of track rod had been welded to the points, the ripper worked only two hours before the tooth had to be replaced.

On this 6.6-mile relocation of U. S. 86 near Branson, Mo.—made necessary by the reservoir that will be formed behind Table Rock Dam—the

rocky soil consists of a tough mixture of flint, clay, and limestone. Practically all of the 290,000 cubic yards of unclassified excavation had to be ripped before a scraper could pick up a load.

Running through the steep, wooded hills of the Ozarks, the 45-mph road has been designed with spiral transitions by Sevrup & Parcel, St. Louis, Mo. It will have a 20-foot roadway, bordered by 5-foot shoulders, and will be surfaced with a double seal coat. Miller Bros. Construction Co., Kansas City, Kans., which started work early in November, 1956, and expects to



CAL-TIE® WIRE in the handy reel dispenser

... Safe

Tying reinforcing bars with Cal-Tie Wire on the convenient reel dispenser is safer than the old-fashioned shoulder coil. There's no awkward coil to catch on protruding objects...no danger of eye injuries...no scratches on neck and ears...and Cal-Tie's unusually smooth surface makes tying easier.

... Economical

Cal-Tie Wire gives more ties per pound. That's because workers can cut the desired length they need... when they need it...don't have to clip off long, useless wire ends after each tie. They can perform other duties without discarding their partially-used supply of tie wire.

Your nearby CF&I representative will be happy to give you complete details on this safe, economical and modern way to tie rebars, etc. Why not see him soon?

CF&I CAL-TIE WIRE

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver • El Paso • Ft. Worth • Houston • Lincoln (Neb.) • Oklahoma City • Phoenix • Pueblo • Salt Lake City • Wichita
PACIFIC COAST DIVISION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia
CF&I OFFICES IN CANADA: Toronto • Montreal • Vancouver • Winnipeg

For more facts, use Reader-Reply Card opposite page 18 and circle No. 355

THE BIG PLUS[®] IN TRANSPORT TRAILERS

*PROVED BY MILLIONS OF MILES

<p>MODEL SP</p> <p>Jack over axle models. Capacities 11 through 25 tons.</p>	<p>MODEL GTX</p> <p>Triple axle, 6 dual wheels. Capacities 25 through 45 tons. Flat or drop deck.</p>	<p>MODEL TT</p> <p>Heavy-duty tilt trailer. Capacities 6, 8 and 10 tons.</p>
<p>MODEL GXTT</p> <p>Gooseneck type, tandem axle tilt-trailer. Capacities 14 through 22 tons.</p>	<p>MODEL GPX</p> <p>Tandem axle. Capacities 16 through 35 tons. Drop deck or flat deck.</p>	<p>MODEL XTT</p> <p>Tandem axle tilt trailer (tow type), capacities 13 through 20 tons.</p>
<p>MODEL T-8-18</p> <p>14 or 18 foot length between the wheel tilt trailers. 8-10 ton capacity.</p>	<p>MODEL GPR</p> <p>Removable gooseneck. Tandem, triple or trunnion axles. Flat or drop decks, or as beam trailers.</p>	<p>MODEL PX</p> <p>Heavy-duty tandem axle, spring mounted platform or flat.</p>
<p>MODEL KSO-D</p> <p>Dual axle drop bed semi, capacities 15 through 30 tons. Drop deck or flat deck.</p>	<p>MODEL MSO</p> <p>Multiple axle drop bed semi, capacities 35 through 75 tons. Drop deck or flat deck.</p>	<p>DUMP TRAILERS</p> <p>Single or tandem axle models. Standard capacities 8 through 15 yards.</p>
<p>MODEL PX-O</p> <p>Heavy-duty, self-loading tandem axle oil field float.</p>	<p>WRITE FOR FREE CATALOG OF COMPLETE LINE</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>TRANSPORT</p> <p>INC.</p> </div> <div style="text-align: center;"> <p>TT</p> <p>TRAILERS</p> </div> </div> <p>CEDAR RAPIDS IOWA, U.S.A.</p>	

"TRANSPORTATION ENGINEERING A SPECIALTY"

For more facts, use Reader-Reply Card opposite page 18 and circle No. 356

CONTRACTORS AND ENGINEERS



An M-R-S 190 unloads a Caterpillar 80 scraper on a fill for the relocated section of the highway. Virtually all of the 290,000 yards of unclassified excavation had to be ripped.



Working a cut that has been ripped, a Cat 80 scraper is pulled by an M-R-S 190 tractor and pushed by a Cat D8 with dozer as it picks up a load. Miller Bros. Construction Co., Kansas City, Kans., has the contract.

finish the job this summer, holds the \$374,000 contract that includes clearing, grading, and surfacing, as well as placing a rock blanket on the slopes of the Long Creek Bridge approaches. This span, in about the middle of the project, is being constructed under a separate contract. Supervising both the construction of the bridge and the highway is the Little Rock District of the U. S. Army Corps of Engineers.

Difficult clearing

Clearing and grubbing the right-of-way was no small chore, for the road ran through hills densely wooded

with hickory, oak, and walnut. The contractor moved in with three Cat D8's with dozers and two Cat D7's with dozers to tackle this operation. To supplement the standard dozer equipment, one of the D8's was equipped with an operator's cage and one of the D7's made good use of a Hyster winch as the hardwood trees were dozed down, pushed into piles, and burned. Roots were dozed out in the cuts but left in place in the fills.

When the clearing operation was almost complete, two Cat single-hook rippers, pulled by two Caterpillar D8 tractors with dozers, started work.

These D8's—one equipped with a torque converter—worked ahead of the scrapers to loosen up the tight formations of flint, limestone, and clay. When a push-dozer was not assisting a scraper, it was pushing a ripper.

During these operations, a Wilson 200-amp welding generator was used with Lincoln Faceweld 12 electrodes to hardface the point. Then, welding two 6-inch sections of track rod vertically on the face of the tooth, the contractor lengthened the life span of the ripper tooth to about two hours, a considerable saving.

Short, long-haul rigs

The longer hauls were worked by two M-R-S 190 rubber-tire tractors pulling Cat 80 scrapers that were push-loaded by a Cat D8 equipped with a torque converter. Two Caterpillar D7 tractors, one pulling a LaPlante-Choate 15-yard scraper, handled the shorter hauls. On this project, one cut ran as deep as 45 feet and one fill ran about as high. Fine-grading and finishing of the back-slopes was done by a Cat No. 12 motor grader.

To get a 90 per cent compaction in



HIGHLY MANEUVERABLE Model "80" sweeps easily around parked cars.

NEW! for CLEANER sweeping at less cost...

TENNANT Model 80 POWER SWEEPER

Specially engineered for EXTRA-clean sweeping, this compact unit offers an important NEW way to sweep congested areas.

Built for fast, low-cost operation, it's a maneuverable 1-man machine... rapidly sweeps parking lots, ramps, city garages, sidewalks, arcades, auditoriums, etc.

Provides Almost 100% Dust-Free Sweeping

Results are dramatic!... Exclusive brush-plus-vacuum system eliminates usual dribbling, assures ultra-clean work. No water spray needed. Sweeps up all loose dirt, dust and litter on-the-run. Write for details on this new CLEAN-sweeping machine.

FEATURES

- Assures EXTRA-CLEAN sweeping; needs no water spray.
- Works easily in traffic.
- Sweeps approx. 4½ ft. path.
- Dumps hydraulically in 10 seconds.
- 5-minute broom change.
- Versatile—ideal for both indoor and outdoor areas.

G. H. TENNANT CO., 753 North Lilac Drive, Minneapolis 22, Minn.



POWER SWEEPERS

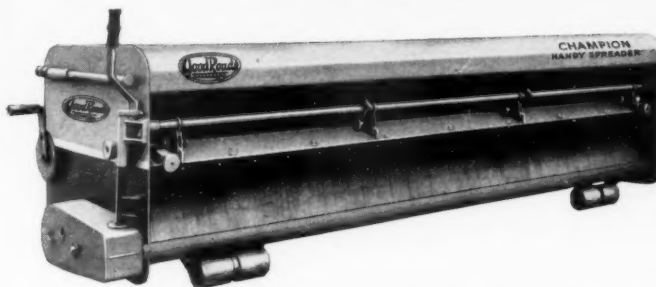
SETS A NEW STANDARD IN CLEAN SWEEPING

For more facts, use Reader-Reply Card opposite page 18 and circle No. 357

MAY, 1957

Good Roads "HANDY" SPREADER for SAND · GRAVEL · CINDERS · CHIPS

AUTOMATIC TRANSMISSION ELIMINATES FEED ROLL GEAR SHIFTING



DURABLE · FAST · MANEUVERABLE · LIGHTWEIGHT

● The Good Roads "Handy" aggregate spreader is designed for improved and economical spreading of sand, slag, stone, gravel, cinders, calcium chloride, etc., up to 1" in diameter... in depths from powder thin to 3".

A flexible keyboard of tempered-steel fingers permits foreign obstacles to drop through without clogging... eliminates streaks or spots... provides the most accurate and smoothest spread possible. Spread is positively controlled by micrometer adjustment from powder-fine to 3-inch

depth—once set, it remains constant for entire job. Quick-Shut-off starts and stops material flow instantly without a dribble.

Location of all controls on left-hand side of hopper permits efficient one-man operation and hitching. Adjustable standard truck hitch fits any size, model or make dump truck and adapts to any width spreader.

The "Handy" spreader is available in 6 models for spread widths of 8, 9, 10, 11, 12 and 13 feet. Narrower widths can be accomplished by use of block-off plates.

For complete details see your local distributor, or write to: Good Roads Machinery Corporation, Minerva, Ohio.



For more facts, use Reader-Reply Card opposite page 18 and circle No. 358



An Insley Model L crawler crane with an Erie $\frac{3}{4}$ -yard clam excavates footings for a pier of the Long Creek Bridge, in the middle of the 6.6-mile stretch. The Jaeger 16S mixers will supply concrete for the substructure, which is being built by L. M. Jones Co., Inc., of Oklahoma City, Okla.

The mixture of flint, limestone, and clay is compacted by a Gebhard Model 120 roller pulled by a Cat D7. Just behind it, a Cat 70 scraper pulled by a D7 push-dozzer comes in to dump its load on the fill.



Gorman-Rupp Pumps keep this hot job moving!

The Horvitz Company, under a \$2½ million contract, is building a ten-span bridge over the historic Ohio Canal and Cuyahoga River near Cleveland. The job, which includes two other bridges and river relocation, opens up a direct connection between heavily traveled Routes 8 and 21.

Constant seepage from the canal is always a threat for Mike Sekela, supervisor for Horvitz. Here he has spotted a Gorman-Rupp 40M Pump, Model 34A-VG4D, to dewater the cofferdam 20 ft. down for pilings. Mike says, "We prefer Gorman-Rupp because of their proven dependability."

THE GORMAN-RUPP COMPANY
305 Bowman Street • Mansfield, Ohio



For more facts, use Reader-Reply Card opposite page 18 and circle No. 359

(Continued from preceding page)

the fills, the contractor used a Gebhard Model 120 tamping roller pulled by a Cat D7 tractor with dozer. Moisture was not needed on the fills during this operation. Although the excavation material was tough and rocky, it broke up into minus 2-inch rock after it had been ripped and scraped.

The 8-inch base course, to be put down this season, consists of 35,000 tons of 1½-inch rolled stone that the contractor expects to obtain by crushing the rock in several deep cuts. The base course will be surfaced with a double seal coat consisting of two layers of chips and three passes of asphalt. An MC-1 primer will be used on the first pass and an MC-5 asphalt on the second and third passes.

Lubrication for the fleet of earthmovers was effectively handled by a Graco Convoy Luber, mounted on a Ford truck. Equipped with three Graco pumps, an emergency fuel tank, and five reels, the truck pulled a two-wheeled trailer, used for night lubrication, that contained a Davey Compressor Co. "Da-V-Lite" light unit.

Miller Bros. Construction Co. has P. S. Harrison as the general superintendent, and Bill Crow as the project engineer. The Corps of Engineers has L. F. Sherman as the resident engineer, J. W. Storey as assistant resident engineer, John P. "Pat" Reilly as supervisor of highway relocation, and 1st Lt. William T. Black and H. B. King as project Engineers.

THE END

Concrete conveyor

■ A booklet giving specifications, photos, and operating features of its new Faircrete conveyor, designed especially for placing concrete, is available from The Fairfield Engineering Co.

The conveyor features an automatic belt wiper, a self-cleaning foot pulley, and triple ball-bearing troughing idlers to prevent accumulation of concrete on the belt and eliminate wear and loss of material.

The Faircrete conveyor is mounted on a pneumatic-tire running gear. Its standard length is 40 feet. Its capacity ranges up to 40 cubic yards per hour, depending upon the slump of the mix and the height to which it is delivered.

To obtain Booklet No. 157 write to The Fairfield Engineering Co., 324 Barnhart St., Marion, Ohio, or use the Request Card at page 18. Circle No. 104.

CONTRACTORS AND ENGINEERS



The International Model VF-230 six-wheeler is designed for heavy-duty off-highway operation. It is shown with its standard 23/8-inch steel grille guard.

Six-wheeler designed for off-highway uses

■ A new heavy-duty six-wheel truck designed especially for off-highway operation is available from the Motor Truck Division of the International Harvester Co. The gross vehicle weight rating of the Model VF-230 is 60,000 pounds.

According to the manufacturer, the new six-wheeler has been designed and built to meet the requirements of severe off-highway operation and to absorb the shock of loading by large shovels and draglines. With its gross vehicle weight rating, the Model VF-230 can mount an 8 or 9-cubic-yard mixer body.

The truck is powered by an International truck-type V-549 engine rated at 257 horsepower. Standard equipment includes a 15,000-pound front axle, a 46,000-pound rear bogie, hydraulic full-power steering, air brakes, a 12-volt electrical system, a 15-inch clutch, a 60-gallon right-side step fuel tank, and a 23/8-inch steel grill guard.

For further information write to the International Harvester Co., Motor Truck Division, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card that is bound in at page 18. Circle No. 35.

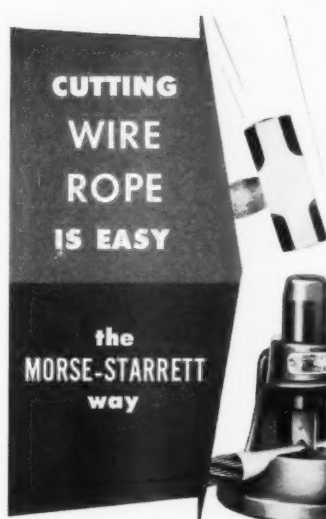
Wehtje retires from Atlas Copco's Swedish branch

Swedish industrialist Walter Wehtje has retired as managing director of Atlas Copco AB, Stockholm, Sweden, a subsidiary of Atlas Copco Eastern, Inc., Paterson, N. J. Former Swedish diplomat Kurt A. Belfrage has succeeded him as head of the international group of pneumatic equipment companies.

Wehtje was managing director of the Atlas Copco group from 1940 up to the time of his retirement. Belfrage joined the firm in 1954 as managing director of its French subsidiary, and a year later was named deputy managing director of the group.

Standard Steel rents plant

Standard Steel Corp., Los Angeles, Calif., has leased additional space at the former U. S. Spring & Bumper location. The area will be used for producing road construction machinery, dryers and coolers for the mining industry, and rocket engines.



FAST — Especially designed cutting blade and dies assures fast cutting action. The hammer principle eliminates any special skill requirements.

CLEAN — Wire rope ends are cut smooth and clean for perfect threading or splicing.

SAFE — The enclosed cutting blade locked in the body of the cutter assures perfect safety.

PORTABLE — Models for tool kit or stationary operation. With cutting capacities up to: 1 inch, 1-1/16 inch, 1-1/2 inch.

SEE YOUR DEALER OR
WRITE DEPT. "B"

**MORSE-STARRETT
PRODUCTS COMPANY**

1204 - 49th AVENUE, OAKLAND 1, CALIF.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 360

Make More Money

Wain-Roy BACK HOE

- MORE VERSATILE
- MORE POWERFUL
- MORE PRODUCTIVE

No piece of equipment gives you the earning power of a Wain-Roy Back-Hoe. It more than doubles the utility of your tractor, handles scores of jobs any time and place; and can handle many jobs faster and more economically than even a truck-mounted back-hoe.

The Wain-Roy Back-Hoe mounts easily and quickly, may be attached or removed in a matter of minutes; when rear-mounted, does not interfere with front end equipment. A simplified hydraulic system provides fast, smooth, powerful operating cycle. Long reach and digging depth give you capacity for larger scale jobs. Digs in a full 190° radius in congested areas.

Put a Wain-Roy Back-Hoe on your jobs and see how quickly it will pay for itself and keep earning for you day after day, season after season. Engineered for Payloader tractor-shovels and International Crawler and Utility tractors.

Built Better — Performs Better

- 190° Digging Radius
- Twin Boom Cylinders
- Cushioned 190° Swing
- 4 Simplified Controls
- Fast Operation Cycles
- Long Reach — High Dump

See your International Construction Equipment Distributor or write direct for full information.

Wain-Roy CORP. Dept. H
Hubbardston, Mass.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 361



Long-reaching, deep-digging back-hoes for Payloader tractor-shovels.



Wain-Roy hoe dug 8 miles of 36" deep trench in less than 8 weeks, through swamps, rock, clay and steep slopes.

The Koehring 445 truck crane has a capacity of 45 tons and can take up to a 120-foot boom and up to a 30-foot straight boom job.

New truck-mounted crane has capacity of 45 tons

■ A 45-ton truck crane that weighs 90,080 pounds and can use up to a 120-foot boom is announced by the Koehring Co. For highway travel, the boom, counterweights, and outrigger beams can be removed to reduce the weight to 67,100 pounds.

The Koehring 445 can use straight boom jibs 15, 20, 25, and 30 feet long with cable for special high-lift crane service. Safety boom limit stops and



power boom lowering are standard equipment. Power is supplied by a Waukesha 45GKB engine that delivers 214 horsepower at 2,400 rpm.

The truck has eight speeds forward, four in main and two in auxiliary,

and a top speed of 31.8 mph. The chassis is mounted on a 220-inch wheel base and measures approximately 10x30 feet. The 14.00x20 18-ply tires are carried on Budd heavy-duty 10-stud wheels. Two outrigger

housings are furnished for extra stability.

For further information write to the Koehring Co., 3026 W. Concordia Ave., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 118.

Caterpillar division news

The Engine Division of the Caterpillar Tractor Co., Peoria, Ill., will move to a new facility 12 miles north of Peoria during 1958 and 1959.

The company also plans to begin site preparation for the industrial engine plant within a few months. The 500,000-square foot facility, and a general office building and research center, will be located on a 1,100-acre area.

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For more facts, circle No. 362



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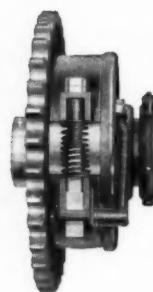
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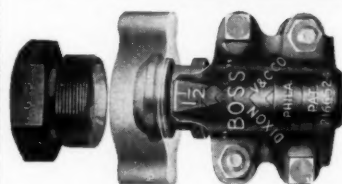
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**GROUND-JOINT
FEMALE
COUPLING
STYLE X-34**



The original washerless coupling that is unequalled for safety in every high pressure service, and will therefore serve with exceptional efficiency and economy on all low-pressure applications. Built to withstand hard use and rough handling. Ground-joint union between stem and spud provides leak-proof, trouble-free seal . . . no lost or worn-out washers to replace. All parts malleable iron or steel, thoroughly rustproofed. Furnished with super-strong "Boss" Offset and Interlocking Clamps. Sizes 1/4" to 6", inclusive.

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MALE COUPLING**
"BOSS", STYLE MX-16



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DIXON VALVE & COUPLING CO., LTD., TORONTO Associate Companies
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For more facts, circle No. 364

CONTRACTORS AND ENGINEERS

D & B takes a look at contractor failures

by JAMES J. ETRO, Dun & Bradstreet, Inc.

While business failures jumped 16 per cent in number—even during last year's period of unprecedented economic growth—the construction industry showed a 31 per cent increase in the number of business failures and a 21 per cent increase in losses sustained by creditors.

A closer look at these bald statistics shows that 18 heavy construction contractors failed during 1956, with a total loss to creditors of \$1,259,000. Percentage-wise, this is an increase of 6 per cent in numbers as compared to the 17 failures reported in 1955. The losses to creditors comes to 47 per cent more than in 1955, when they were listed at \$854,000. The average liability for each heavy construction contractor that failed in 1956 was \$69,944.

Road construction contractors fared better during the year. Failure statistics for 1956 show that 33 firms failed, with a total loss to creditors of \$2,110,000, but these figures represent a decrease of 18 per cent in numbers over the 40 reported failures in 1955. Creditors' liabilities, which set a record of \$7,213,000 in 1955, decreased 71 per cent last year. The average liability for each road contractor failing in 1956 was \$63,939.

Pattern of failure

Why, during a period when business activity was at the record break-

ing levels of 1956, should failure figures be on the increase? Is it because of insufficient capital, inadequate volume, or excessive fixed assets or the rising costs of doing business that these failures occur? Basically, these are operating problems that every

business experiences. They are not the causes of a business failure, but the factors that influence the success or failure of a business operation.

What then is the cause of a business failure? Over the years, one pattern has recurred consistently in Dun

& Bradstreet's studies of the causes of bankruptcies involving losses to creditors. A failure can be directly traced, in most instances, to a clearly identifiable human weakness on the part of the people running the business. This failure may be in judg-

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No matter how deep you go underground, you can take fresh air with you and get rid of stale air, gases and fumes through dependable Naylor Spiralweld pipe.

Over the years, contractors have come to recognize the advantages of Naylor over other lightweight pipe. In large diameter vent pipe, for example, the exclusive Naylor spiral lock permits the use of lighter gauge material without sacrifice of strength or safety—particularly in push-pull operations.

Along with this obvious economy, you save time and money by using the one-piece Naylor Wedgelock coupling for fast, positive connections—especially where only one side of the pipe is in the open.

Whether you need pipe for ventilating, air and water, hydraulicking, dredging or materials handling, it will pay you to look into this Naylor pipe and coupling combination.

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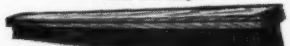
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Steel Wire Road Drag Leveler, Six (6) Inches Wide
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In Stock Lengths of 4-6-8-10 or 12 feet
Only \$3.50 Foot "Approx. wt. 5 1/2 lbs. per ft."

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The LITTLE
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3" Wide, 15" Length
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management

ment, personality, decision, or know-how.

It is also a proven fact that usually high levels of sales and output encourage many inexperienced people to start business in the hope of learning as they go, while capitalizing on the prevailing general prosperity. Basically, a contractor's own ability, and not the economic climate of the time, counts most in a successful business operation.

The number of road and heavy construction contractors that failed in 1956 is too small in itself to break down separately, but a study of the causes of failures among all construc-

Failures of Road and Heavy Construction Contractors 1934-1956*

Year	Road Construction		Heavy Construction**	
	Number	Liabilities	Number	Liabilities
1934	32	\$1,711,000	2	\$ 622,000
1935	20	849,000	3	286,000
1936	17	1,020,000		
1937	12	687,000	1	3,000
1938	17	793,000	2	49,000
1939	14	492,000	1	41,000
1940	25	1,479,000	2	49,000
1941	16	1,152,000	6	171,000
1942	9	165,000	5	234,000
1943	4	153,000		
1944	2	103,000	1	52,000
1945			3	203,000
1946	3	183,000	2	109,000
1947	4	373,000	1	285,000
1948	8	537,000	11	500,000
1949	21	765,000	9	1,628,000
1950	21	994,000	11	593,000
1951	15	1,996,000	10	972,000
1952	11	796,000	5	275,000
1953	28	2,390,000	10	2,153,000
1954	19	1,345,000	12	773,000
1955	40	7,213,000	17	854,000
1956	33	2,110,000	18	1,259,000

* This Dun & Bradstreet record includes those businesses that ceased operations following assignment or bankruptcy; ceased with loss to creditors after such actions as execution, foreclosure, or attachment; voluntarily withdrew leaving unpaid obligations; were involved in court actions such as receivership, reorganization, or arrangement; or voluntarily compromised with creditors.

** Includes sewers, water mains, tunnels, dams, bridges, etc.

tors indicates danger signals that road and heavy construction contractors may use to check their operations.

In the study of the 1,834 construction failures made by Dun & Bradstreet, Inc., for 1956, four principal

causes of failure became apparent: disaster, fraud, neglect, and—the most important—inexperience.

Of the total construction failures for 1956, there were 29 failures, or 1.6 per cent of the total, for which reasons could not be ascertained.

SOLID COMFORT AND SUPERIOR PROTECTION AT A NEW LOW PRICE!



THE GENTEX No. 105 SAFETY HAT

Delivers Full-Shift COMFORT . . .

Men like to wear it because it's lightweight, with wrinkle-free adjustable head band and exclusive new better-than-ever snap-in sling.

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Strong plastic construction that tops all Government safety standards, insulates against heat and sun and withstands over 10,000 volts.

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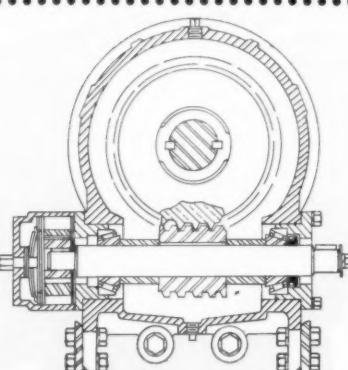
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BRADEN TRUCK WINCHES

Here's Where QUALITY Tells . . .



The BRADEN worm gear is made of solid bronze alloy (on light and medium duty models), and solid bronze alloy cast around solid steel hub (on heavy-duty models). The shell type worm is made of hardened and ground, special treated alloy steel.

These two gears, the heart of the mechanism of the winch, are engineered to give an extra margin of safety should the operator load the winch beyond its rated capacity.

BRADEN Truck Winches are made in capacities from 6,000 to 100,000 pounds. Specify BRADEN Winches . . . and be sure!

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BRADEN Winches

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For more facts, circle No. 368

Disaster accounted for ten, or 0.6 per cent of the failures. Included under disasters were strikes, which accounted for 0.1 per cent of the failures; flood, which took 0.1 per cent; and employees fraud, also 0.1 per cent. Another 0.1 per cent was shown for other reasons that seemed to belong under the classification of disaster. Some of these failures could have been provided against by the proper insurance.

Another 35 failures, or 1.9 per cent, resulted from fraud or fraudulent intent on the part of the principals of the businesses. This was reflected by the irregular disposal of assets, which accounted for 1.3 per cent of the failures; by false financial statements, which accounted for another 0.2 per cent; by premeditated over-

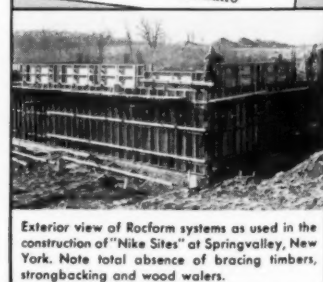
Case History #139
Ridgewood, New Jersey. Contractor Reports:

"CONCRETE FORM ERECTION COSTS CUT 47% WITH ROCFORM SYSTEMS"

on the erection of 'Nike Sites' for the United States Government under the direction of the Corps of Engineers, U. S. Army.

We were able to reduce our erection costs by 47% less than they formerly were when we used a less advanced forming method that employed snaptys, 4' x 8' panels, and 2 x 4, 2 x 6 walers, strongbacks, etc. In addition to these savings, 90% of standard bracing, strongbacking and all tie rod and hardware expense. These savings aid us materially in obtaining new construction jobs.

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Exterior view of Rocform systems as used in the construction of "Nike Sites" at Spring Valley, New York. Note total absence of bracing timbers, strongbacking and wood walers.

COST-CUTTING FEATURES OF ROCFORM SYSTEMS

- All metal walers
- All hardware is guaranteed and replaced without charge when necessary
- No snaptys
- Eliminates 90% of standard bracing and strongbacking
- Reduces erection costs as much as 50%
- Gives up to 300 pours and more before reconditioning is required
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- Extreme versatility makes Rocforms easily adaptable to any concrete forming job
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IMPORTANT! Rocform Systems can be used with equal ease for Commercial, Industrial or Residential work.

For more facts, circle No. 369
CONTRACTORS AND ENGINEERS

buy, which also took another 0.2 per cent; and the remaining 0.2 per cent is accounted for by other reasons belonging under the fraud classification.

A larger, but still small, percentage of businesses failed because of neglect. The apparent cause of neglect in 2.3 per cent of the cases was poor health. Bad habits caused neglect in 0.7 per cent of the cases, and marital difficulties another 0.6 per cent. As a whole, neglect as a cause of failure added up to 3.7 per cent—or 68 of all construction failures for 1956.

Mismanagement

But more than nine out of ten construction failures—92.2 per cent in this study—appeared to be caused by failure in management. The breakdown looks like this:

	Per Cent	Number
Incompetence	36.7	673
Unbalanced experience	24.1	442
Lack of managerial experience	21.9	402
Lack of experience in the line	9.5	175
Total	92.2	1,692

This group was also analyzed as to the surface causes or the reasons given as excuses for failure. More than one third, or 34.2 per cent of the failures were attributed to inadequate sales. Another 28.4 per cent blamed tough competition for their difficulties. There were 1.9 per cent that said it was inventory burden that forced them out of business, and another 4.6 per cent said their hands were tied by excessive fixed assets. 14.5 per cent said it was because they could not collect the money owed them, and 0.5 per cent said their trouble was poor location. A few, 13.1 per cent, blamed their failure on heavy operating costs.

Because some failures were attributed to a combination of apparent causes, these figures add up to slightly more than the 92.2 per cent of the failures analyzed.

All these failure statistics by Dun

Total Construction Failures 1934-1956*

Year	Number	Liabilities
1934	826	\$ 26,341,000
1935	686	22,151,000
1936	507	28,228,000
1937	584	11,625,000
1938	625	10,081,000
1939	646	11,031,000
1940	760	13,311,000
1941	701	10,671,000
1942	748	10,232,000
1943	399	5,455,000
1944	164	2,376,000
1945	92	3,559,000
1946	139	4,340,000
1947	239	7,211,000
1948	439	15,609,000
1949	838	27,245,000
1950	912	25,651,000
1951	957	37,473,000
1952	838	36,145,000
1953	1024	43,327,000
1954	1305	56,829,000
1955	1404	83,179,000
1956	1834	100,803,000

* This Dun & Bradstreet record includes those businesses that ceased operations following assignment or bankruptcy; ceased with loss to creditors after such actions as execution, foreclosure, or attachment; voluntarily withdrew leaving unpaid obligations; were involved in court actions such as receivership, reorganization, or arrangement; or voluntarily compromised with creditors.

MAY, 1957

Comparative Failure Trends

	Percentage change number	1955-1956 liabilities	Average liabilities per failure in 1956
Total failures, all businesses	+16	+25	\$44,356
Total construction	+31	+21	54,963
General building contractors	+60	+36	76,434
Road contractors	-18	-71	63,939
Heavy construction contractors*	+6	+47	69,944

* Includes sewers, water mains, tunnels, dams, bridges, etc., in this Dun & Bradstreet chart.

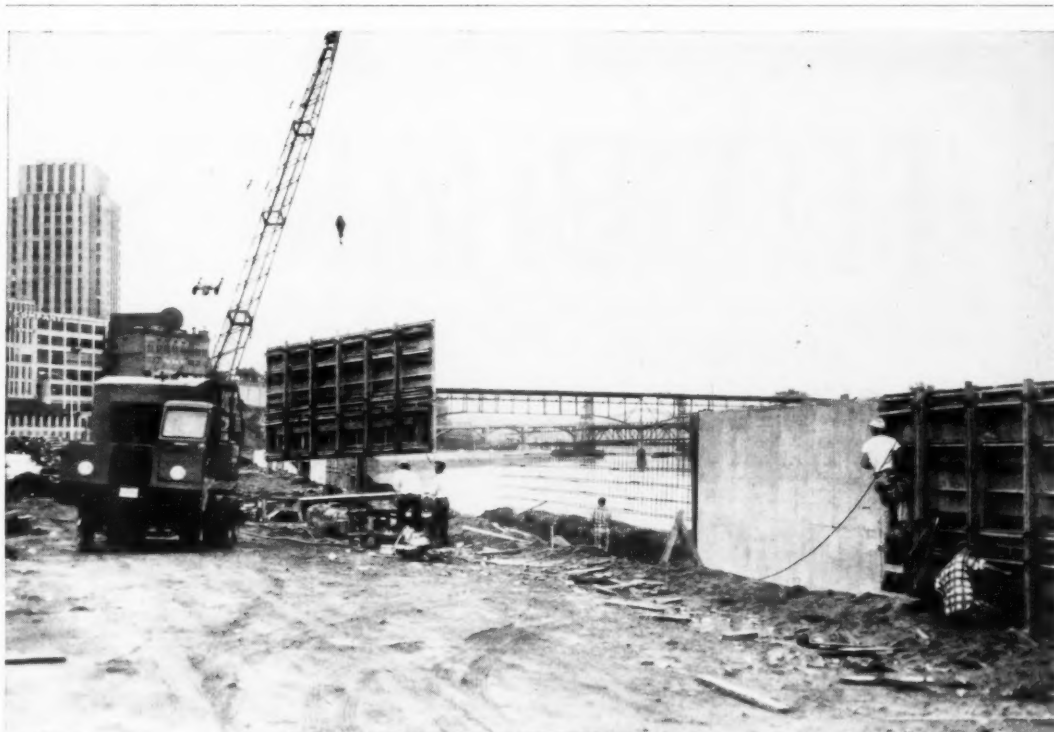
& Bradstreet include only constructors who failed with losses to creditors. Not included in the Dun & Bradstreet tabulations are voluntary retirements from business, transfers of ownership, and those constructors who closed their doors owing no bills. The road and heavy construction contractors considered as failing in

1956 are the ones that did so at the expense of someone else.

Although it is no part of Dun & Bradstreet's function to predict the future, it is reasonably safe to say that 1957 will bring problems to be solved and challenges to be met to all contractors.

No matter what 1957 brings there

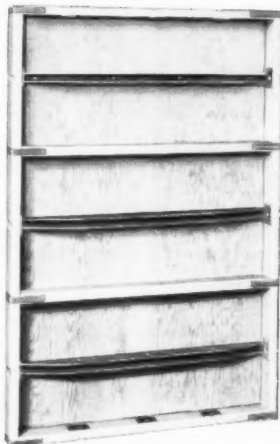
is always room for the road and heavy construction contractor who knows what he is doing and how to do it. Initial profits may be may through service, quality, and the right location, but only by sound management policies and practices will a firm be able to hold on to those profits and build the business. THE END



2,400 foot retaining wall poured prior to construction of Shepard Road, a main traffic artery in St. Paul, Minnesota.

70 feet of river retaining wall completed in one pour by GANG FORMING

SYMONS Wide Panel Forms



Symons Steel Strut Wide Panel Forms have 2 x 4 cross members to strengthen the panel and minimize deflection when pouring. Panels are built in 6' and 8' lengths and 30", 36" and 48" widths. Fewer panels per job are required with Steel Strut Wide Panels.

Pouring of a 2,400 foot retaining wall along the north bank of the Mississippi River in downtown St. Paul was accomplished with Symons Wide Panel Forms made up in gang sections of 10' x 24' and 15' x 24'. Panels 4' x 6' and 3' x 6' were used to form the sections.

Hurley Construction Company, St. Paul, contractor on the job, used only 5,400 square feet of Symons Wide Panel Forms. By gang forming, Hurley was able to speed construction and meet tight time schedule. 70 lineal feet of concrete was poured in one pour with a maximum pour of 700 lineal feet in one week. Walls were battered, 19 inches at the bottom and 12 inches at the top.

Handling of the sections with a crane was made easy by using a cable behind the top waler and a 3 by 8 plank permanently bolted about 18 inches from the bottom of the section. Walers and stiff backs were put on permanently.

Engineering Service—Our Engineering service includes preparing, from your plans, a complete form layout and costs sheets—no charge or obligation. For additional information on Symons products and services send for our FREE catalog.



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For more facts, use Reader-Reply Card opposite page 18 and circle No. 370



THIS 4-PLANE HANGAR, 40x320 feet, consists simply of Leap pre-stressed concrete double tees, supported by cantilevered pre-stressed concrete girders. The hangar, designed by Jack West, Sarasota, Fla., was built for the Sarasota County Mosquito Control Commission, Sarasota.

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if it moves...we can stop it!

...for every industrial application where heavy duty braking is required!

FSH... FLOATING SHOE HYDRAULIC BRAKE

designed for close control with heavy loads

Unequalled stopping power and outstanding control are characteristic of the FSH. The brake shoes operate with a floating action. This permits the shoes to center themselves in the drum... eliminates the danger of liner loads concentrating at one point. The result of this even load distribution is a dependable, controllable brake... in either direction of travel.

The FSH now is available in a wide range of sizes for dependable control application on industrial, construction and materials handling equipment.

Other outstanding features offered by this new Timken-Detroit® FSH Brake are listed at the right:

For every industrial, agricultural or automotive application where braking is required!



Mechanical Parking Brake Hook-up. A separate parking brake is no longer necessary with FSH. If specified, the FSH Brake can be furnished with a mechanical parking brake linkage.

Long-life Lining. Brake lining is bonded to the shoe to give maximum lining area.

Positive Automatic Adjustment for special applications. One application of the foot pedal sets the automatic adjustment. No further adjustment of the brake is required during the full life of the brake lining.

Positive Contact Drum Seal. For applications where a sealed brake is required, the FSH incorporates a seal between the brake backing plate and brake drum.

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For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 371

Timken-Detroit Brake Division
Rockwell Spring & Axle Company
Dept. CE-57, Ashtabula, Ohio

Please send me further information on your "FSH" brake.

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Company _____
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Inspection device detects surface cracks on the job

■ A portable inspection device that utilizes magnetic particles to locate surface cracks of all kinds is available from the Magnaflux Corp. The Y-5 Magnaflux yoke operates from a 115-volt ac outlet or from a 12-volt auto-type battery. One man efficiently performs the complete inspection.

The Y-5 yoke is placed on the item to be inspected perpendicular to the direction of possible cracks. With the switch on, the operator applies a dry magnetic powder, if the surface being tested is rough, or a liquid oil suspension of magnetic powder, if the surface is smooth or if speed is important. The tiny magnetic particles line up at any crack, making its exact direction and length clearly visible.

The powders are available in several colors. The most rapid wet powder inspection employs fluorescent Magnaglo, which, when viewed with a portable black light, makes a line of light to mark the crack.

Magnaflux inspection is recommended to contractors for detecting cracks-on-the-job in booms, hooks, pulley-wheels, tractor links, frames, and other iron or steel equipment components.

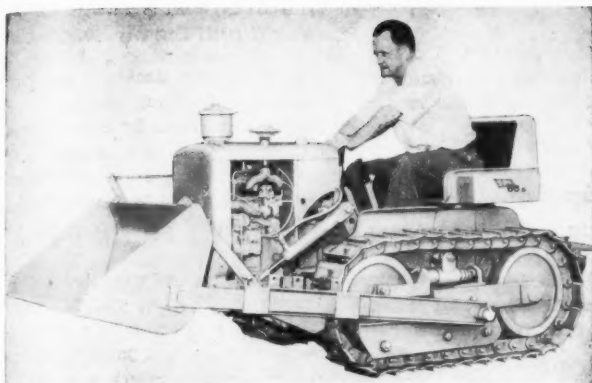
For further information write to the Magnaflux Corp., 7300 W. Lawrence Ave., Chicago 31, Ill., or use the Request Card at page 18. Circle No. 126.

Rear-dump trucks

■ Descriptive literature on four new rear-dump models manufactured by the Euclid Division of the General Motors Corp. is available from the company. The bulletins contain specifications on the Model S-7, an over-hung-engine-type tractor with a semi-trailer of 12-ton payload capacity; and the Model S-18, a semi-trailer with a rated payload of 35 tons and a heaped capacity of 32 cubic yards. Information is also given on the Model R-18, a conventional-type hauler with an 18-ton capacity; and the Model R-40, a tandem-axle machine powered by two engines with separate Torqmatic drives for each axle—a total of 470 or more horsepower. The latter has a 40-ton capacity.

To obtain this literature write to the Euclid Division, General Motors Corp., 1361 Chardon Road, Cleveland 17, Ohio, or use the Request Card that is bound in at page 18. Circle No. 61.

CONTRACTORS AND ENGINEERS



The SPI-66 G tractor is claimed to have the highest horsepower-to-weight ratio available. A 35 to 1 gear ratio delivers 14.2 drawbar horsepower.

New crawler tractor has high hp-to-weight ratio

■ Highest horsepower-to-tractor-weight ratio is claimed by Stephen Products, Inc., for its new SPI-66 G crawler tractor. The rig has a 35-to-1 gear ratio delivering 14.2 drawbar horsepower. Powered by either a gasoline or diesel engine, the tractor weighs approximately 2,000 pounds.

The SPI-66 G is recommended to fill the gap between rubber-tired tractors and heavy crawlers. It is 40 inches wide, 40 inches high, and 88 inches long. Its size, plus its clutch and differential steering, make it very maneuverable, the company reports. It can be transported on a small trailer or pick-up truck.

Attachments available for the SPI-66 G include a high-lift loader; a 30-inch rotary tiller; a scoop complete with long rails, all brackets, and support arms; a front-mounted scoop with short rails to interchange with a dozer blade; an angle-dozing blade with a carbon lip; a five-tooth scarifier; and an implement power takeoff.

For further information write to Stephen Products, Inc., Tractor Division, Crystal Lake, Ill., or use the Request Card at page 18. Circle No. 3.

Heavy-duty dump bodies hold 3 to 12 cubic yards

■ Heavy-duty dump bodies with capacities of from 3 to 12 cubic yards are available from the Hardee Mfg. Co. The units feature the Hardee Quick Load Release body design and heavy-duty steel floors.

To encourage the quick release of loads, the running boards, tailgate braces, and interior walls—where they meet the floor—are all sloped to eliminate right angles and prevent the accumulation of moisture-retaining corrosive deposits. This brings about a faster dumping action, the company states.

An inverted channel runs the entire length of the body to reinforce the top rail. The space required to house the telescopic cylinder when the body is in the down position is only 8 x 14 inches. A special Bail-Lift device applies the lifting power to the understructure beneath the load instead of to the sheet-metal sides and welds of the dog house.

For further information write to the Hardee Mfg. Co., P. O. Box 626, Plant City, Fla., or use the Request Card at page 18. Circle No. 145.

MIX and PAVE

-ALL IN ONE OPERATION



THE BURCH
MODEL 12
ONE-MAN
CONTROL
PAVER and
RESURFACER

Mixes, spreads, and levels bituminous material 10 to 12 feet wide in ONE pass. Material is rolled and mixed FOUR times. Easily adjusted to spread uniform thicknesses over varying contours. Wheel base is 22' 10". The Burch Paver is tractor-pulled — but its operation is hydraulically controlled, with power supplied by a self-contained gasoline engine. FOR SOIL STABILIZATION — GRAVEL ROADS — BITUMINOUS MIX-IN-PLACE. Write Dept. CE for literature.

The BURCH Corporation
CRESTLINE, OHIO, U.S.A.

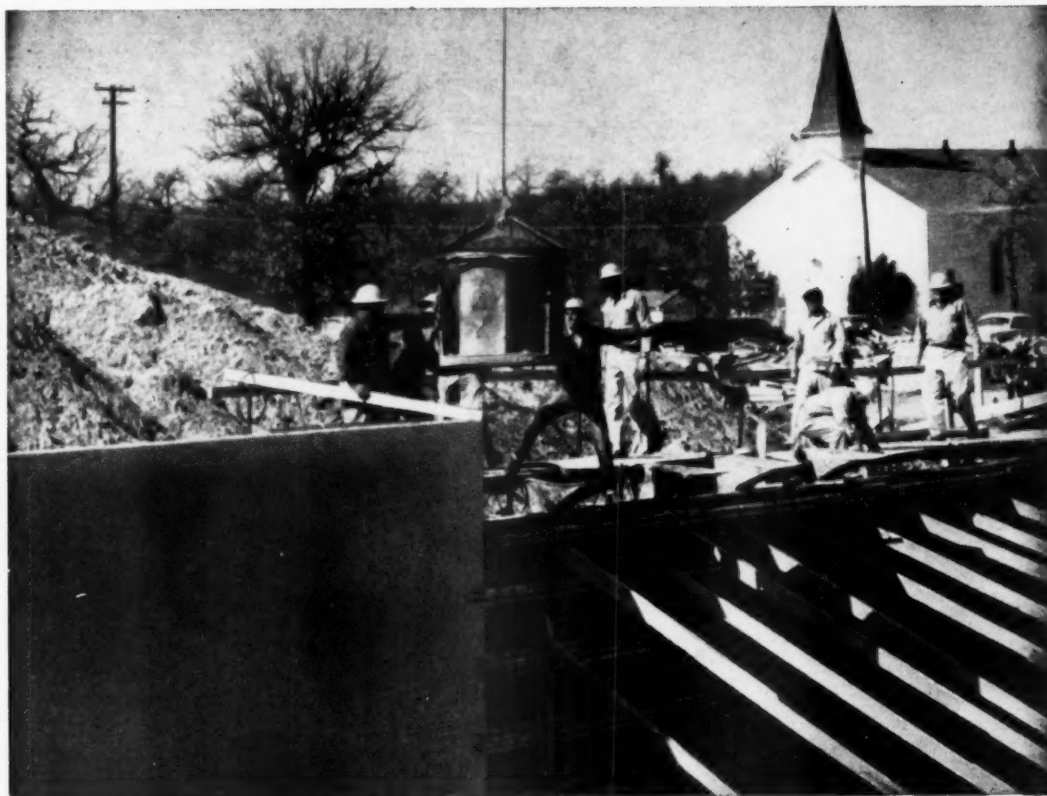
MANUFACTURERS OF EQUIPMENT
FOR CONSTRUCTION AND MAINTENANCE
OF ROADS AND STREETS

For more facts, use Reader-Reply Card opposite page 16 and circle No. 3R1

NOW...WHEN POURING CONCRETE—

Drastically reduce costs of your plywood forms with

SONNEBORN FORM-SAVER



FORM-SAVER REDUCES COSTS. HERE'S WHY:

- Gives maximum protection of wood forms with a minimum of labor. Just brush it on or dip forms into it!
- Provides 8 to 10 re-uses from your forms before re-coating with Form-Saver!
- Produces clean, smooth concrete surfaces that show no wood grain . . . that require little, if any, rubbing except for fins and butt joints.
- Reduces painting costs. There are no oil stains to remove . . . paint goes further, is easier to apply due to smoothness of surfaces. Form-Saver helps reduce the cost of painting by as much as 25%!

Sonneborn Form-Saver is a fast-drying coating that deposits on plywood forms a water-impervious film resistant to the alkalinity produced by the hydration of portland cement.

For further information on Sonneborn Form-Saver FILL IN THE COUPON

A Product of **Sonneborn** RESEARCH

Makers of Lapidolith Concrete Hardener
Hydrocide S-X Colorless • Hydrocide Dampproofings

L. SONNEBORN SONS, INC.
Building Products Division—Dept. CE-5
404 Fourth Ave., New York 16, N. Y.

Gentlemen:

Yes, I would welcome a free copy of Technical Data Guide No. 48 on Sonneborn Form-Saver.

Architect ☐ Engineer ☐ Contractor ☐

Name

Company

Location

City

distributor doings



Percy Glass, sales manager of Euclid-Memphis Sales, Inc.

Euclid-Memphis appoints

Percy Glass has been promoted sales manager of Euclid-Memphis Sales, Inc., Memphis, Tenn., distributors of Euclid and Bucyrus-Erie products. Glass joined Euclid-Mem-

phis in 1955 as a salesman covering the eastern Arkansas and Memphis area.

Joy appoints dealer

Rowen-Leahy Co., Inc., Hartford, Conn., has been appointed a distributor for the line of air compressors, wagon drills, hand-held drills, paving breakers, and tampers manufactured by the Joy Mfg. Co., Pittsburgh, Pa. The dealer will cover the state of Connecticut and four counties in Massachusetts.

The firm also named Safway Scaffold Co. of Wichita Falls, Inc., Wichita Falls, Texas, a distributor for the Joy line of air compressors, rock drills, pneumatic tools, and air, electric, and gasoline hoists. Safway will

serve the north-central counties of Texas.

Duckworth Supply Co., Inc., has also been appointed a distributor for the Port Arthur and Orange area in Texas.

Buffalo-Springfield news

R. B. Wing & Son Corp., Albany, N. Y., has been appointed a dealer for the Buffalo-Springfield Roller Co., Division of Koehring Co., Springfield, Ohio. Wing, from offices at 384-386 Broadway, will cover 15 counties in eastern New York State.

Another new Buffalo-Springfield distributor is Dalrymple Equipment Co., of Amory, Miss., and Memphis, Tenn. Dalrymple will cover Mississippi, Arkansas, and western Tennessee.

Huber-Warco dealers in East and the Midwest

Mott-Manbeck Machinery Co., Inc., Latham, New York, has been appointed a distributor by Huber-Warco Co., Marion, Ohio. In 13 counties near the Albany, New York area, sales, service and parts for Huber-Warco road machinery will be supplied by the new dealer.

The firm has also appointed Archer Tractor & Machinery Co., Salt Lake City, Utah, a new distributor to handle sales service and parts for motor graders, tandem rollers, and maintainers in Utah, northeastern Nevada, and southwestern Wyoming. Archer offices are located at 1118 South Main Street in Salt Lake City.

Detroit Diesel appoints

Western Engine Co. has been named a distributor for the Detroit Diesel Engine Division, General Motors Corp., Detroit, Mich. The dealer, located at 7122 Ogden Ave., Berwyn, Ill., is a new corporation formed for the sales and service of industrial and marine engines exclusively. The firm will cover Chicago and the northern Illinois area.

Thalman Co. founder dies

Alfred J. Thalman, founder and president of the Thalman Equipment Co., Inc., New York, N. Y., died of a heart attack in Miami, Fla. Thalman founded the earthmoving equipment distributorship in 1926 under the name of Contractors Service Station. The name was later changed to Contractors Service Co., and on October 1, 1955 it became known as the Thalman Equipment Co., Inc.

Drott Tractor Co. sells 10,000th LaCrosse trailer

The Drott Tractor Co., Inc., Milwaukee, Wis., sold the 10,000th trailer manufactured by the LaCrosse Trailer Corp., LaCrosse, Wis., to Otto Holtz and Henry Geurink, owners of the Rib Mountain Construction Co., Wausau, Wis. The 24-ton capacity tandem axle, flat bed trailer is 8 feet wide and 35 feet long, and will be used to transport Rib Mountain's equipment.

Onan export manager calls on African distributors

George Lugas, export manager of D. W. Onan & Sons Inc., Minneapolis, Minn., has returned from Africa where he called on the firm's distributors. Lugas went to Morocco, French West Africa, Liberia, Union of South Africa, South West Africa, Belgian Congo, and Angola. He also stopped at Portugal, the Azores, and Venezuela.

Littleford names dealer

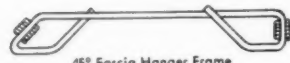
Littleford Bros., Inc., Cincinnati, Ohio, has appointed a new dealer, Builders' Equipment & Supplies Co.

CONTRACTORS AND ENGINEERS



Support of these slab forms was quickly and easily accomplished from above with the Richmond Free Fit Hanger Frame-Ty. (Bridges above Ardley over Saw Mill River Parkway—part of New York State Thruway construction; Raylin Construction Corp. and The Lynn Corporation, general contractors.)

additional advantage: all tightening is done from the top of the hanger by means of the nuts (see circle in large illustration), the Tylag passing freely thru an oversized coil.



Dual uses of these Richmond Hangers have become standard: Fascia Hanger Frame-Tys used not only to hang the forms but also tie in the Fascia Ty; a variation of this is the 45° Fascia Hanger Frame for light overhang, where one 45° bolt supports the fascia overhang and hangs the form; Hanger Frame Screeds combine support of the deck forms with an adjustable base for screeding or supporting curb forms.

Richmond Hanger Systems have reduced the contractor's overhead in time and materials, added safety to his operation and improved the quality of his work. The various types of Richmond Hanger Systems and their applications are detailed in the NEW

Study of Slab Form Support Shows Savings with Richmond System

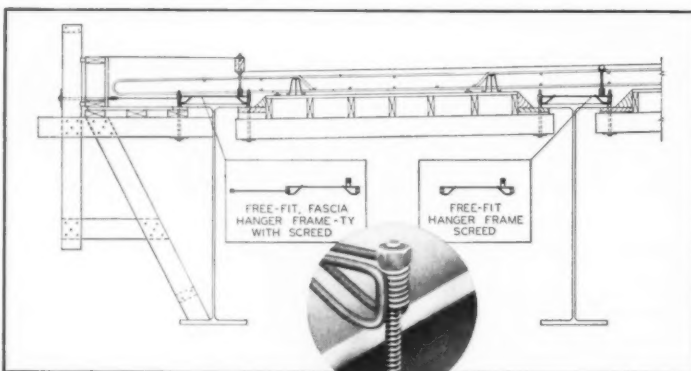
By what standards do contractors measure the effectiveness of flat slab form support methods? Which support systems are proving most helpful?

A survey brought out the following facts: experienced contractors measure the effectiveness of flat slab form support systems in terms of three things: the degree of speed, safety and economy which they bring to a job.

Loose wire is no longer used extensively because it meets none of the above three requirements. The use of wire beam saddles also is becoming less common. Although prefabricated to size, they are non-adjustable, and there is no positive means of tightening against the steel to prevent leakage of concrete.

Posting or "horses" are still used but this method is comparable to bracing wall forms. Prefabrication costs are high and erection is slow because of wedging and nailing usually required at the bottom flange of the beam. On high structures and deep beams this procedure is dangerous because the men have to reach down to the bottom flange to make the final tightening adjustment.

Richmond Hanger Frame-Tys are ideally suited to hang this type of



construction. These units in Standard, Free Fit or Offset types (see illustrations) can all be adjusted for various slab heights and haunch conditions. Their established safe working loads enable the contractor to take full advantage of lumber strength and hanger capacity.

Richmond Standard and Offset Hanger Frame-Tys can be erected with a minimum of reaching under the top flange of the beams. Richmond Free Fit Hanger Frame-Tys have an

Richmond Catalogue. Write for your copy. Or, if you have specific concreting problems, Richmond's Technical Division or field men will be glad to advise you.

Write: RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Ave., Brooklyn 8, N. Y., or 315 S. 4th St., St. Joseph, Mo.



For more facts, use Reader-Reply Card opposite page 18 and circle No. 374

Operating from 40 Canal St., West Medford, Mass., and 1 Warren Ave., East Providence, R. I., the dealer will carry a complete line of Littleford road construction and maintenance equipment.

Four Wheel Drive dealer

Slattery, Inc., Akron, Ohio, has been appointed exclusive sales and service dealer for the Four Wheel Drive Auto Co., Clintonville, Wis. From offices at 463 Locust St., Slattery will handle Four Wheel Drive's transport tractors and ready-mix trucks in northeastern Ohio.

Cleaver-Brooks dealer

The Norbert W. Enslen Co., 1987 William Lane, Dayton 1, Ohio, has been appointed a representative for Cleaver-Brooks Co., Milwaukee, Wis. Enslen Co. is providing information on Cleaver-Brooks line of self-contained boilers for heating or processing applications, and general engineering assistance.

Dealer makes the mark

Ray Ferwerda of the Rayall Co., North Miami, Fla., sells Gradalls, and while in Germany recently, he suggested one to speed mining. He bet a salesman \$25 that the Germans would buy one. Six weeks ago Ray received 100 marks—equivalent to \$25.

Olin Mathieson dealer

Graybar Electric Co., Inc., New York, N. Y., has been named a national distributor for Shure-Set, a product of the Ramset Fastening System, Olin Mathieson Chemical Corp., New York. Shure-Set is a hammer-powered tool fastener for concrete and steel work.

Childers appoints dealer

The Childers Mfg. Co., Albuquerque, N. Mex., producers of circulating hot oil heaters, have appointed the Clark Equipment Co., Little Rock, Ark., a dealer for the entire state of Arkansas.

Thew appoints Gunther; promotes two others

George E. Gunther, formerly assistant sales manager, has been appointed sales manager of the shovel and crane products manufactured by the Thew Shovel Co., Lorain, Ohio. Gunther will supervise the firm's district sales managers, and direct sales activities with domestic distributors.

Wilson H. Madden is the new sales manager of special products as they are developed and ready for announcement and distribution. Madden had been Thew's merchandising methods manager. The former manager of sales development, Quincy J. Winsor, has been promoted to sales technical manager, supervising technical information regarding engineering applications and market specialization.

Yale & Towne opens plant

A new materials-handling plant has been completed at San Leandro, Calif., by the Yale & Towne Mfg. Co., Philadelphia, Pa. The 2½ million facility will start production in August on the firm's Trojan line of bulk material-handling equipment, including tractor-shovels.

Armco Drainage elects two vice presidents

Alvin J. Mistler and Delbert J. Stoker have been elected vice presidents of Armco Drainage and Metal Products, a subsidiary of Armco Steel Corp., Middletown, Ohio. Mistler will continue as manager of the Midwestern division of the company with headquarters at Topeka, Kans. Stoker

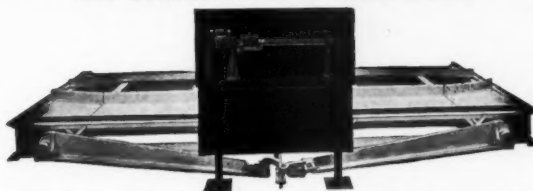
retains his position as manager of Armco Drainage's North Pacific division with offices in Portland, Oreg.

E. A. Correa, secretary and general

counsel for Armco Steel, has been appointed to the board of directors of Armco Drainage, succeeding Charles R. Hook, who resigned.

WINSLOW—PORTABLE TRUCK SCALE

"THE CONTRACTORS' SPECIAL SCALE"



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Cap.: 15-18-20-30, 50 tons
Write us for name of your nearest distributor

WINSLOW SCALE COMPANY

P. O. Box 1198
Terre Haute, Indiana

For more facts, use Reader-Reply Card opposite page 18 and circle No. 375



Anthony Bodies Do Almost 2/3 of the Trucking for 236 Mile Kansas Turnpike

... haul extra payloads to help finish super highway in record time of 22 months!



The Teleramic V Seal Hoist Is A Major Factor In Frameless Trailer Success

Proven "V" seal packing is only one of many quality features in the Teleramic Hoist design. Because the dry operating "V" seal is self-adjusting, repacking or manual adjustment of the Teleramic Cylinder is very rarely needed. "Truss rings" encircle and reinforce the ends of each cylinder tube to prevent "flaring". Extra long bronze bearings and long overlap of the cylinders help keep them perfectly aligned.

The giant Kansas Turnpike was scheduled to open for public traffic on October 15, 1956. As 1956 began, actual completion of the 4-lane, divided highway lagged 23.5% behind schedule. With Anthony Dump Bodies doing the lion's share of the trucking, the race for time began. It was during this period that the extra payload hauled on every trip by Anthony bodies really counted. The Teleramic design of Anthony Hoists paid off in fewer time-consuming stops for service. On October 25, only 10 days after the scheduled opening, the super Kansas Turnpike was officially opened to traffic!

Anthony Teleramic Hoists and Bodies are lighter in construction. The Hoist is in an extreme forward position with more of its weight on the front axle. For these reasons, Anthony Dump Bodies haul extra legal payloads which can mean savings in time and increases in profit . . . on your jobs, too!

Buy The Dump Body That Has The Service

Over 100 Anthony Distributors are located nationwide. At least one is convenient to you . . . ready to give immediate service on all Anthony equipment. Complete descriptive literature is now available on Anthony Teleramic Hoists and Dump Bodies. No obligation, of course. Just write to: 1734 Baker Street.

ANTHONY COMPANY • Streator, Illinois

For more facts, use Reader-Reply Card opposite page 18 and circle No. 376

Highway realignment job requires deep cuts, peat excavation

A P&H Model 255 dragline with a Hendrix 1-yard bucket excavates a peat pocket ranging from 12 to 15 feet deep. The job required 150,000 cubic yards of peat to be dug out and used for top dressing or wasted.



Deep peat excavations and a million cubic yards of earthwork with cuts ranging up to a depth of 108 feet made a difficult grading job for Gilliland Construction Co., Alpena, Mich., contractor on a 6½-mile alignment of highway M-94 southwest of Munising in Michigan's upper peninsula. The section was designed and supervised by the Newberry Division of the Michigan State Highway Department.

A typical section has a 40-foot grading top with 1 to 2 or 1 to 4 shoulder slopes, depending on the nature of the material and the available space. Backslopes are all 1 to 2 and are sodded. A 7-inch course of compacted gravel base 23 feet wide was surfaced with a double bituminous seal to finish the roadway.

The contractor started operations by clearing and grubbing the area in time to begin the grading phase. A Caterpillar D9 and several D8 tractor-dozers, handling the clearing operations, pushed the heavy stand of hardwood timber into piles on the right-of-way where it was burned.

Dragline operations

Included in the million cubic yards of excavation for the project was 150,000 cubic yards of peat which was dug out of deep pockets that sometimes reached a 25-foot depth. The heaviest part of this peat excavation was handled by two Koehring 605 draglines using Hendrix 1¾ and 2-yard buckets; a P&H Model 255 dragline with a Hendrix 1-yard bucket was used for smaller deposits. The three rigs, working from mats on the soft peat swamps, cast all the material to the side where it was wasted or later used for top dressing.

Several scraper spreads moved in as soon as conditions would permit, and began making the big cuts and fills to build the roadway. Some of the material from the roadway cuts was dozed into the empty peat pockets to build up a solid subgrade.

A spread of four International TD-24 tractors with LeTourneau W scrapers moved a large part of the short-haul dirt and finished the long backslopes and the roadway. On the longer hauls, six rubber-tire scrapers took over—two Euclid S-18 scrapers, two LeTourneau - Westinghouse B Tournapulls, and two C Tournapulls. Caterpillar D9 and D8 tractor-dozers assisted the scrapers on the loading

Before you invest in a make sure you get king-size



Make sure you don't wear blinders when you invest in king-sized crawler power!

Make sure every dollar you invest buys the top pay-off power features. Look to the International TD-24 for the most profitable king-sized crawler performance your money can buy!

Make sure you don't dissipate dollars on a king-sized machine with load-limiting, "dead-track drag"!

The useful load of any king-sized, steering-clutch crawler is limited to what it can pull or push on turns. "Dead-track drag" hogs horsepower!

Exclusive and years-proved Planet Power steering gives the TD-24 full-time live power on both tracks. Upgrade or down, the TD-24 pulls or pushes its big loads on the turns or straight ahead, *with both tracks!*

Make sure you don't drop big money in high-priced time losses with "service-nervous" engine clutch complications!

The TD-24 gives you the operating ease, power-transfer efficiency, temperature-immunity, and service economy and simplicity of the International Cerametallic-faced engine clutch. And heat-defiant, long-lasting Cerametallic facings have amazing resistance to wear!

In your king-sized tractor, make sure you get your big money's worth—by getting the cycle-speeding advantages of TD-24 on-the-go shifting!

And compare how the TD-24's exclusive two-speed planetary system gives instant, stall-preventing Hi-Lo shifting without declutching in either the Torque-Converter or Gear-Drive models. You also get the added advantage of "no-stop" shifting with exclusive synchromesh transmission in the Gear-Drive model.

Make sure you don't fizzle away big finances by handicapping your operator—give him a break!

Give him TD-24 flush-deck design, control-tower vision, and reach-easy finger-tip controls to increase operator comfort and performance. Give him "one-engine" simplicity for seconds-fast starting and dependable diesel operation. Give him ALL of the dozens of other king-sized production-boosting TD-24 advantages!

Make sure you invest wisely and get full dollar value in giant-sized performance. See your International Construction Equipment Distributor for a TD-24 demonstration!



A Euclid S-18 scraper spreads material in thin layers over the fill and an Adams Model 610 motor grader, left, blades the material to shape. In the background, a Cat D8 shapes and builds the fills.



A Caterpillar D9 tractor-dozor pushes a LeTourneau-Westinghouse B Tournapull in one of the deep cuts. A million cubic yards of earth was obtained from cuts that ranged up to 108 feet deep.

in a king-sized crawler g-sized performance!



With the TD-24 Torque Converter model as pusher, four International 75 Payscraper units prove able to outperform a fleet of six competitive self-propelled scrapers! Contractor, Terra Construction Co., Great Bend, Kansas, is handling a 500,000 cu yd grading job on Kansas 15, near the Nebraska line. "Perfect performance from all our International equipment," states Job Superintendent Weller.

"Where our other tractors failed this TD-24 has the stuff to get the job done," reports Mike Cashen, for Cashen and Erickson, Hibbing, Minnesota. "It is fast, easy to maneuver, and the only tractor we found that could load in these rocks!" The job is building a tailings settling pond at a new Taconite plant in the Mesabi Iron Range. Because it's tough, the TD-24 wins the job of push-loading three self-propelled scrapers, and 'dozing boulders aside!



**INTERNATIONAL
CONSTRUCTION
EQUIPMENT**

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

cycles, and helped shape and build the fills.

Pockets of wet, unstable material in some of the deep cuts provided real tests of floatation and power for the big scrapers and the big D9 pusher. In rainy weather, these areas had to be opened up and then left to dry out before the scrapers could load the material. The worst of this material was wasted, since there was an excess of cut over fill on the project.

Most of the material put into the cuts was of a sandy nature, and it was readily compacted to produce the required 95 per cent Modified Proctor density. Heavy equipment was run over the fills as much as possible, and a sheepfoot roller was also used when necessary.

In most instances, the scrapers spread the material in thin layers over the fills. Caterpillar D8 tractor-dozers shaped the fills and helped compact the thin layers. Two motor graders, an Austin-Western Master 99 and an Adams Model 610, finished the roadway, trimmed the backslopes, and maintained haul roads for the scrapers.

Working a 10-hour day—weather permitting—the six rubber-tire scrapers and four tractor-scraper moved between 40,000 and 60,000 cubic yards of material in a 6-day week.

As soon as the grading crews finished a cut, a subcontractor, Snowden Construction Co., Marquette, Mich., placed sod on the backslopes, which had slopes ranging up to 108 feet high. The contract included the furnishing and placing of more than 120,000 square yards of sod.

Gravel base work

Material for the base course, produced in a pit near the job by the general contractor, consisted of a mixture of gravel, sand, and clay binder. The pit-run material containing the proper proportions of these ingredients was excavated by a Bucyrus-Erie 22-B shovel. It was fed to an Austin-Western portable crushing and screening plant, which crushed oversize rock to a maximum 3/4-inch size.

The base material was stockpiled at the pit until the road subgrade was prepared. In some areas where the natural subgrade was not suit-

For more facts, use Reader-Reply Card opposite page 18 and circle No. 377



A Cat D9 tractor-dozes a Euclid S-18 scraper on one of the deeper cuts. In rainy weather, pockets of wet, unstable material in these cuts had to be opened up and then left to dry out before the scraper could load the material.

(Continued from preceding page)

able, a 1.5-foot sand cushion was placed ahead of the base course.

When the subgrade was ready, the base material was trucked from the pit and spread on the roadbed by a shop-made spreader attached to the front of a Caterpillar D8 tractor. The material, watered and manipulated by a motor grader to distribute the moisture and shape the surface, was compacted with rubber-tire rollers pulled by farm tractors.

The finished base was primed with an application of MC-0 cutback asphalt and sealed with two applications of AE-3 asphalt cement. The first seal coat was covered with $\frac{3}{4}$ -inch aggregate, and an application of finer aggregate, spread over the

second seal, was broomed and rolled in.

Because of the relatively large number of high fills, some of which ranged up to 40 feet in height, the sub-contractor, Wyatt Construction Co., Grand Rapids, Mich., placed more than 15,000 linear feet of guard rail consisting of wood posts and double cables.

Personnel

Gilliland's supervisory staff on the project included superintendent Richard Glawe, grade foremen Don Enos and Don Norman, and drainage foreman Norbert Pauly. The Michigan State Highway Department was represented on the job by project engineer Matt Tuntri. Construction engineer for the Newberry District is T. E. Anderson. State highway commissioner is Charles M. Ziegler.

THE END

The New UNIT Model 510 Challenger ... with Clamshell

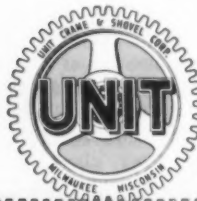


DESIGNED with a BACKGROUND of $\frac{3}{8}$ YARD EXPERIENCE

Evidence of highest quality engineering and construction includes alloy steels and forgings • anti-friction bearings • modern transmission design with involute splines to add strength and reduce wear • straight-in-line engine mounting with torque converter • trunnion supported tapered drums to eliminate bending stress on drive shafts • easily accessible hydraulic clutches • minimum number of main machinery gears enclosed in one-piece cast gear case • force feed lubrication • self-aligning replaceable hook shoes distribute applied pressure over maximum area • interchangeability of parts simplifies maintenance, cuts costs. All these UNIT advantages mean more profitable operations for you.

Why it's BEST to INVEST in modern UNIT models

Because each feature has been proven to contribute substantially to the Life, Performance and Efficiency which have made present and previous UNIT products readily acceptable.



UNIT CRANE & SHOVEL CORP.
6309 W. Burnham St. • Milwaukee 14, Wis., U.S.A.

Geared to boost your earnings!



For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 378

UNIT CRANE & SHOVEL CORP.
Milwaukee 14, Wisconsin

Please send me your new Bulletin on
the UNIT CHALLENGER Model 510.

Name.....
Address.....
City.....
State.....

Corps of Engineers develop crevasse detector

The U. S. Army Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Va., and the Southwest Research Institute of San Antonio, Texas, have developed a device that locates crevasses—camouflaged Arctic canyons that are sometimes 100 feet wide and 150 feet deep.

The device consists of four electrodes placed at approximately 20-foot intervals. A Weasel, an over-snow vehicle that carries special electronic equipment, moves three electrodes in the form of disk-shaped sleds about 4 square feet in size, and acts as an electrode itself. The search-head is pushed ahead of the Weasel to create a low frequency electromagnetic field, which is distorted by the presence of a crevasse.

A special recorder inside the Weasel stays steady when the terrain is uniform. When the search-head reaches a crevasse, the difference in the air in the crevasse and the surrounding area causes a noticeable change in the recording. The alarm is distinct when the Weasel is about 10 feet from the danger point—this is sufficient warning, since the vehicle travels about 3 to 5 mph.

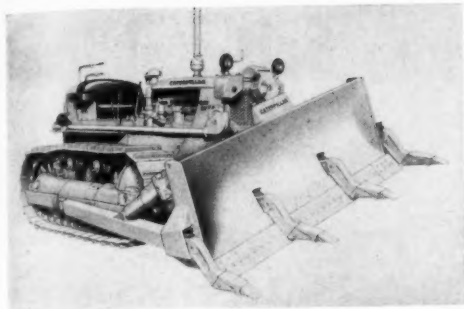
NCA survey on corporate educational programs

According to a survey by the National Constructors Association, New York, N. Y., engineering and building companies are increasingly using corporate educational programs to alleviate the current shortage of trained engineers, draftsmen, and other technicians.

In some cases this interest takes the form of direct grants and scholarship funds to engineering colleges. Other current programs include part-time jobs for engineering students, financial aid to employees studying engineering subjects, and encouraging employees to serve as part-time teachers at local engineering schools.

The survey was conducted among member companies of the National Constructors Association.

CONTRACTORS AND ENGINEERS



Four penetrating teeth mounted on the cutting edge of the Cat Gyro Dozer rip up stubborn material and help full-load the blade more rapidly.

Special dozer combines ripping and earth moving

■ A new earthmoving tool that combines the functions of ripping and moving material in one bulldozing operation and eliminates the need for a separate rigging operation is announced by the Caterpillar Tractor Co. The Gyro Dozer is said to be able to produce full blade-loads in less time and shorter distances.

The new bulldozer restricts the length of the cutting edge entering the ground, breaking up, and conditioning hard material more readily and supplying a more efficient wedging angle to utilize the tractor's full power, the company reports. Four penetrating teeth mounted on the cutting edge of the Gyro Dozer blade extend forward from the blade at a distance of 20 inches. The teeth are used to rip up stubborn material in order to more rapidly obtain full loading of the blade.

The blade is capable of being tipped both forward and backward and of being tilted 20 degrees to either side. This is said to facilitate any desired ripping angle of the teeth. The tilting action is provided by two hydraulic cylinders mounted on the blade in place of the tilt braces. The blade is controlled by a No. 44 front-mounted hydraulic control.

For further information write to the Caterpillar Tractor Co., Peoria, Ill., or use the Request Card at page 18. Circle No. 16.

Purpose of automation discussed in text

"Automation: Its Purpose and Future", by Magnus Pyke, describes the principles of the digital computer and the way it was developed. Automation in mass-production industries is detailed, and how computers can also be used to make special machine tools or the constructed parts of aircraft is described.

The book also covers such topics as automatic engineering and chemistry; guided missiles; automation and transportation; and automatic accounting.

Copies of the text, which cost \$10.00, can be purchased from the publisher, Philosophical Library, Inc., 15 E. 40th St., New York 16, N. Y.

Two join Lincoln Electric

Jack R. Barckhoff and David J. Nangle have joined the Lincoln Electric Co., Cleveland, Ohio. Barckhoff is assigned to the firm's Minneapolis, Minn., district office, and Nangle is appointed to the Union, N. J., office.

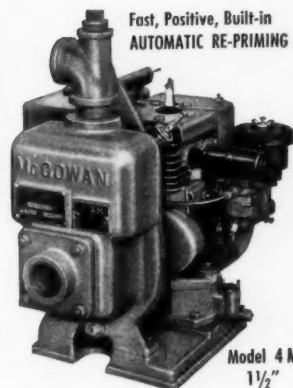
depend on dependable McGOWAN LIGHT and HEAVY-DUTY Pumps

COMPLETE CAPACITY RANGE TO HANDLE EVERY JOB

- Plumbing
- Waterworks
- Road Building
- Street Repairs
- Public Utilities
- Dredging, etc.
- Diversion of Waterflow

LIGHTWEIGHT PORTABLE

Solves troublesome job-site problems. Non-clogging, high efficiency impeller design for tough pumping conditions.



Write today for name of your nearest distributor ... get complete details!

McGOWAN PUMPS Dependable Pumps Since 1852

DIVISION of LEYMAN MANUFACTURING CORP., 58 Central Ave., Cincinnati 2, Ohio

For more facts, use Reader-Reply Card opposite page 18 and circle No. 379

HAYNES Alloys solve the tough wear problems

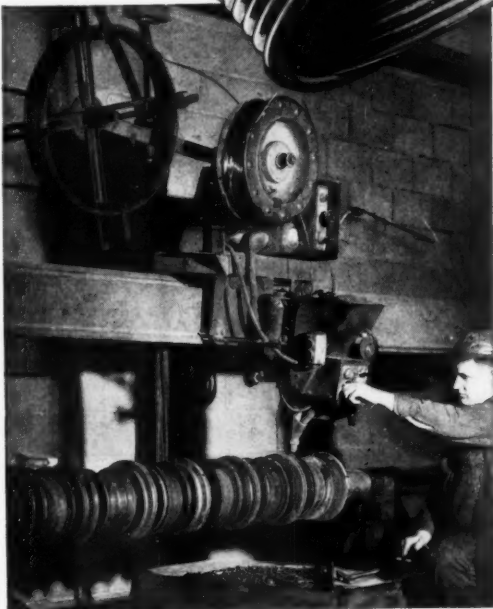


Something NEW in HARD-FACING COILS

Newly developed drawn tube rod in coils as easy to apply as solid wire...

HAYNES hard-facing rods in coils give you uniformly hard deposits and smoother feeding—yet cost the same as ordinary tube rod. They also assure steadier deposition rates... can be used with standard equipment without nozzle change... meet standard wire tolerances for roundness and concentricity... and withstand the same feed roll pressures as solid wire.

They are available in six alloys for superior protection against abrasion and impact. For complete information send for descriptive booklet. Write HAYNES STELLITE COMPANY, A Division of Union Carbide Corporation, Kokomo, Indiana.



... Especially suited for protection of such parts as tractor rolls and idlers, rock crushing rollers, shafts, sleeves.

See...
or
Write...

Your local
Haynes Stellite Dealer

to
Haynes Stellite Company

"Haynes" is a registered trade-mark of Union Carbide and Carbon Corporation

For more facts, use Reader-Reply Card opposite page 18 and circle No. 380

TYING WIRE?

Speed YOUR Job with Ideal Reel

and do it SAFELY!
at less COST!

FOR BRIDGES, DAMS, CULVERTS,
FLOORS, WALLS, AND OTHER JOB
APPLICATIONS.

High Production Increase with IDEAL Reels

		Ties Per Min. with Ideal Reel	Ties Per Min. Using Should- er Roll	Percent- age of Increase
MAN X	1st Try	20	16	25%
	2nd	20	14	42.8%
	3rd	23	16	42%
MAN Y	1st Try	29	21	38%
	2nd	27	22	22%
	3rd	27	21	28.5%
MAN Z	1st Try	23	18	28%
	2nd	24	18	33.3%
	3rd	24	16	50%

AVERAGE INCREASE, 34.4%

Have you seen IDEAL reel in action?
If not, call your nearest dealer for a
free demonstration or clip this ad to
your letterhead and mail to IDEAL
REEL COMPANY, Paducah, Ky., for
full details.



For more facts, use Reader-Reply Card opposite page 18 and circle No. 372

Doing It the Easy Way with SIMPLEX JACKS...



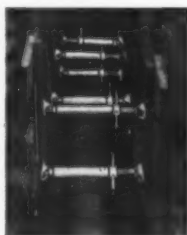
PRESTRESSING CONCRETE SLAB with a Simplex Re-Mo-Trol 30-ton hydraulic puller. When cured, 26' x 38' slab will be raised to form third story floor of school building. Intervening floors will then be cast, prestressed and raised into position. Only Re-Mo-Trol gives straight-line pull to prestressing wires through unique "center-hole", eliminates need for complicated back-up devices. Also has many uses as a powerful lifting jack on construction jobs.



15-TONS OF LIFT on either the cap or toe of this Simplex Model 24A jack is a feature that construction men like. Full capacity toe lets them lift from minimum clearances, cuts wedging and blocking necessary. Jack is ratchet lowering lever type; raises or lowers notch-by-notch—can't be tripped. 13" of lift.



TIMBER "STRETCHER" speeds shoring on foundation and tunneling work. Simplex Shoring Jacks, available in 25-ton or 35-ton sizes, are faster and safer than old-fashioned saw and wedge methods.



WHEN YOU'RE DOWN A HOLE you can feel safe with these Simplex Trench Braces on the job. Made entirely of drop forged steel. Easy to adjust, grip at any angle, can be nailed to timber for slip-proof safety. For any width trench.

SIMPLEX CONSTRUCTION JACKS are fully described in General Catalog 56. Write for a free copy.

TEMPLETON, KENLY & CO.

2511 Gardner Road • Broadview, Illinois

For more facts, use Reader-Reply Card opposite page 18 and circle No. 382



Salt stabilization



A Caterpillar No. 12 motor grader windrows the surfacing material to a minimum depth of 4 inches before salt is added.



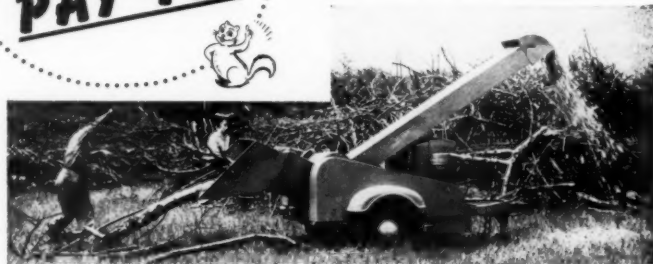
A Richland County truck straddles the windrow as two workmen alternately empty the salt sacks over the tail gate. Alternate sacks are dumped on opposite sides of the windrow.



Salt and surfacing material are thoroughly mixed by a Seaman-Andwall Pulvi-Mixer, with 7-foot drum powered by a gasoline engine and towed by an International farm tractor.

**DON'T
PAY IT!**

Don't pay the high cost of loading and hauling brush when a rugged, efficient Asplundh Chipper can save you as much as 75% of this expense.



ASPLUNDH CHIPPERS completely eliminate brush loading, cut hauling drastically. Comparison shows 1 truckload of chips equals at least 4 of brush. And an Asplundh Chipper does away with burning, too; a boost to your public relations.

Yes, however you look at the problem of brush removal, an Asplundh Chipper is a substantial cost-saving. It is designed to do the job... has been proven in use by the largest tree company in the world. It's efficient, powerful, so simple in design that maintenance is reduced to an absolute minimum.

Send now for complete details... better still, ask for a no-obligation demonstration. See why Asplundh is the fastest-selling chipper made... why it merits the reputation as the accepted standard throughout the world.

ASPLUNDH CHIPPER COMPANY 505 York Road, Jenkintown, Pa.

BY ACTUAL TEST THE FASTEST CHIPPER MADE

For more facts, use Reader-Reply Card opposite page 18 and circle No. 383

Saltsaves gravel on county roads

The use of salt as an aid in stabilizing rural roads is proving economical in the Red River Valley area of North Dakota. Not only does this process produce a serviceable, easily maintained road at low cost, but it also helps conserve the very limited supply of gravel which is available in the area.

Started as an experiment in Richland County in 1954, the method is now being used by several counties and is being expanded to include a considerable mileage of the secondary roads in the area.

In an effort to conserve the rapidly diminishing supplies of gravel in the area, Adolph Tryba, Richland County engineer, tried the first salt stabilization experiment in the area in 1954. Tryba had studied the other possibilities such as soil-cement, asphalt stabilization, and a light road-mix mat. He found them all too expensive to fit his budget, since costs ranged upward from \$5,000 per mile.

When he tried the salt stabilization method and found the cost to be less than \$1,000 per mile, Tryba knew he was on the right track. Three years

of experience with the method have added substantial proof to support his belief. The first road, put down in 1954, used only 4 tons of salt per mile and is still standing up well despite heavy gravel-hauling traffic.

The amount of salt has been gradually increased and the processing refined until the county now applies 8 to 10 tons of salt per mile for a 24-foot wide roadway. The county has been using Morton's formula 10 sack salt, a fine salt that looks like table salt. The material costs about \$27 per ton delivered in the area, and the cost per mile of stabilized road is about \$250. Total costs on the work average less than \$700 per mile of 24-foot roadway.

Stabilize 4-inch mat

When a section of road is selected for processing, its gravel surfacing is carefully appraised. If there is less than 4 inches of gravel left on the road, new material is added to make up for the deficiency. The gradation of the material is also studied, and

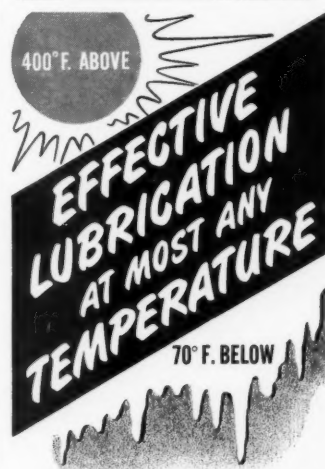
(Concluded on next page)



In Cass County salt is fed into a Tarco Scotchman spreader rear-mounted on a Dodge truck. The spreader supplies the salt at a definite rate based on the speed of the truck.



As soon as the salt is mixed, the finishing train moves in. A Dodge truck with a 1,500-gallon tank sprays water on the roadway, and three tractor-drawn rubber-tire rollers compact the surface. The operation is repeated two or three times to close the voids and provide a dense surface.



The fact that LUBRIPLATE Lubricants are able to meet extreme temperature conditions demonstrates the ability of these products to cope with the wide variations found in everyday industry. Besides this feature, LUBRIPLATE Lubricants possess attributes not found in conventional lubricants.

HIGH TEMPERATURES

LUBRIPLATE No. 930-AA.—Provides superior and protective lubrication for all types and sizes of machines operating at temperatures as high as 500°F. Possesses exceptionally high film strength and adhesiveness. Protects all metallic parts against rust and corrosion.

LOW TEMPERATURES

LOW-TEMP LUBRIPLATE—The outstanding multi-purpose grease type lubricant that will remain plastic at 70°F below Zero, yet has a Melting Point of 270°F. Resists water and acids—protects against rust and corrosion even from calcium chloride used on paved roads during winter months.

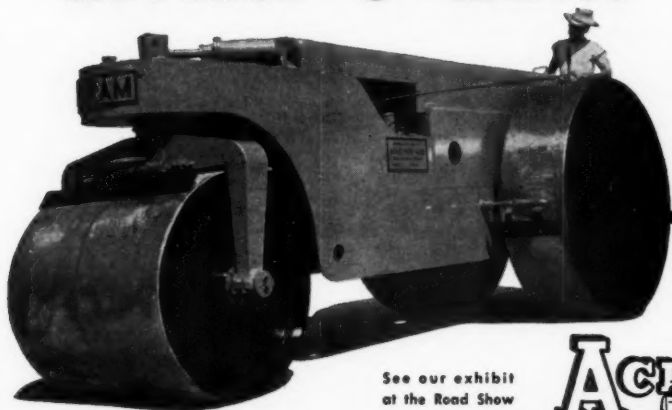
For nearest LUBRIPLATE distributor see Classified Telephone Directory. Write for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. LUBRIPLATE DIVISION, Fiske Brothers Refining Company, Newark 5, N. J. or Toledo 5, Ohio.



For more facts, circle No. 385

INGRAM

with NEW
REVERSE - O - Matic



See our exhibit
at the Road Show

Acme IRON WORKS
P.O. BOX 2020 • SAN ANTONIO 6, TEXAS

Ingram rollers with the reverse-o-matic drive permits no-stop power shifted reversing. Reverse-o-matic can be shifted while the roller is moving, therefore there is no delay for clutching or shifting gears. There is no maintenance required, no adjustments to be made and no clutches to replace. The reverse-o-matic furnishes smooth shockless power that reduces engine wear and prolongs life of other power transferring mechanism.

All these advantages show that an Ingram roller equipped with "Reverse-o-Matic" furnishes the most practical roller you can use.

See and get the facts on Ingram before you buy your next roller.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 384

(Continued from preceding page)

the new mixture is adjusted to give a binder content of about 20 per cent.

The surface is bladed and worked with a Pulvi-Mixer, if necessary, to break up lumps and secure a homogeneous mixture. The motor grader blades the surfacing into windrows before salt is added. In some instances the salt is applied to the windrow with a mechanical spreader, such as a Tarco Scotchman, to give a definite rate of application based on the truck speed.

In other cases, an ingenious hand method provides for the uniform application. In this method, the surfacing is divided into a number of windrows, and a sack of salt per 100 feet of windrow will approximately give

the desired amount per mile—three windrows result in an application of practically 8 tons per mile.

The truck carrying the sack salt drives slowly along straddling the windrow, and two workmen alternately empty the bags over the tail gate. The truck drags a 100-foot chain with a flag on the end. By watching this flag, the men spread each sack of salt over the 100-foot area. Alternate sacks are dumped on opposite sides of the windrow, so each man can tell where he started and stopped.

The salt and surfacing material is thoroughly mixed by a pull-type Seaman Pulvi-Mixer with a 7-foot drum powered by a gasoline engine and towed by an International farm tractor.

As soon as the Pulvi-Mixer has

made one pass, water is added from a 1,500-gallon gravity-feed tank carried on one of the county's snowplow trucks. Water is added during the mixing period until the optimum moisture content is obtained.

Tryba has a quick test for optimum moisture which works very well with the soil he is using. He takes a sample of the material and forms it into a ball in his hand. When the material will stick together as a ball with a light squeeze but crumble apart again when pressed between two fingers, he has the proper amount of water.

Water and roll

The properly moistened material is then bladed to one side exposing the subgrade, which is given a heavy shot of water. Since the heavy gumbo sub-

grade is nearly impervious, practically all of this water will be regained by surfacing.

Motor graders, doing a minimum amount of blading, lay out the material in 1-inch lifts that are later compacted by an American 13-wheel rubber-tire roller pulled by a rented farm tractor.

When the entire roadway has been laid out, shaped, and rolled, the surface is flushed lightly with water and immediately rolled. This operation is repeated two or three times to close the voids and provide a dense surface.

The road is then maintained as a gravel road without additional sealing. It remains practically dustless and requires very little attention. Some of these roads have been sealed with an asphalt penetration treatment, but this is not considered essential.

THE END



ADAMS DIVISION: LE TOURNEAU-WESTINGHOUSE COMPANY mounts their motor grader's final drive on Timken tapered roller bearings to take radial, thrust loads in all combinations, hold shafts in rigid alignment, reduce gear wear.

Makes the grade, takes the shocks with TIMKEN® bearings

A MOTOR grader must be tough! That's why this one, built by Adams Division, Le Tourneau-Westinghouse, has Timken® tapered roller bearings in 20 vital spots: front wheels, tandem axles, final drive, transmission and power box drive. There is no dissipation of power, with Timken bearings at work—because they practically eliminate friction, conserve power, boost machine efficiency! And Timken bearings, with their tapered construction, take radial and thrust loads in any combination.

This machine's work—bank sloping, ditch cutting, scarifying, subgrading, mixing, snow removal, etc.—sets up heavy shock loads. Timken bearing rollers and races are case

carburized; hard surfaces resist wear, and tough cores take the heavy shock loads. Full line contact between rollers and races gives extra load-carrying capacity.

Maintenance on the Adams motor grader is greatly reduced, too. Timken bearings hold shafts in rigid alignment, let gears mesh easily, which means they last longer. And Timken bearings hold shafts concentric with housings, which makes closures more effective in sealing out dirt, dust, water, keeping lubricant in.

Geometrically designed to give true rolling motion, Timken bearings are precision-made to live up to their design. We even make our own steel, which no other American bear-

ing manufacturer does. Always look for the trade-mark "TIMKEN" on every bearing! The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.



TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD

For more facts, use Reader-Reply Card opposite page 18 and circle No. 386

Working scope increased by extension mounting

■ The working scope of the Walpole-Nordquist drafting machine can be increased to full board size by a new extension mounting available from The Walpole Co. When equipped with the extension mounting, the drafting machine can make large-scale draw-



The Walpole extension mounting permits the Walpole-Nordquist drafting machine to make large-scale drawings that were possible before only with large and expensive instruments.

ings that were possible before only with large and expensive instruments, according to the company.

The Walpole extension mounting clamps to the back edge of the drawing board with two hand-tightened thumb screws. End clamps and the sleeve support bracket are made of heat-treated high-strength aluminum castings. The extension bar is fabricated of chrome-plated steel.

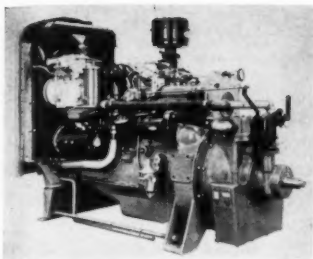
According to the manufacturer, the extension mounting permits the drafting machine to be raised clear of the drafting board. It will hang suspended over the back edge, leaving the board free for other work.

For further information write to The Walpole Co., 100 Boylston St., Boston 16, Mass., or use the Request Card at page 18. Circle No. 20.

Texas Portland Cement opens new plant

The Texas Portland Cement Co., Orange, Texas, has opened a new plant in Orange. All equipment in the 700,000-barrel capacity plant was designed and built by the Kennedy-Van Saun Mfg. & Engr. Corp., New York, N. Y. The new plant is designed to meet the needs of the Sabine Valley, which is now undergoing an extensive expansion program in industrial building and highway projects.

CONTRACTORS AND ENGINEERS



White Motor Co.'s new line of Mustang stationary engines have horsepower ratings of between 110 and 160 and are recommended for powering such construction rigs as draglines, cranes, and shovels.

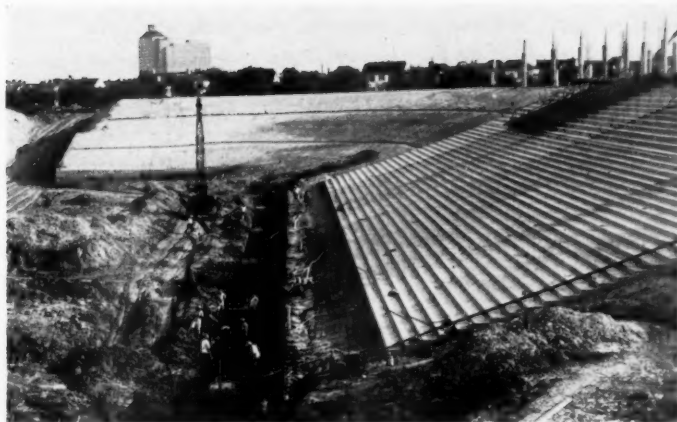
Line of gasoline engines has wide range of uses

■ A new line of stationary gasoline engines ranging in belt horsepower from 110 to 160 is announced by the White Motor Co. The Mustang engines are available for a wide range of power applications, including those requiring torque converters or special transmissions.

The extensive use of high-strength light-weight metals is said to give the Mustang line an excellent power-to-weight ratio. Other heavy-duty features include dual carburetion with an aluminum six-port water-jacketed manifold, aluminum-alloy pistons with ni-resist top compression ring inserts, sodium-mercury-filled exhaust valves, and zero-lash hydraulic valve lifters.

The engines are recommended for use on draglines, cranes, shovels, and irrigation pumps. The larger plants in the line feature a water-cooled exhaust manifold, a full-flow oil cooler, and a safety instrument panel with tachometer and transmitter.

For further information write to the White Motor Co., 842 E. 79th St., Cleveland, Ohio, or use the Request Card that is bound in at page 18. Circle No. 21.



SPECTATORS OF FOOTBALL GAMES at the new Rice Institute field, Houston, Texas, will be unaware of the problem that faced engineers on this job. Since the playing area is 25 feet below ground level, 8-inch perforated metal pipe drains were installed in the field and tied into the storm drains being laid here. The 15 to 30-inch-diameter Armco asbestos-bonded pipe, to be backfilled with clay, will empty into a collecting pit, and water will be pumped from the pit to storm sewers outside the stadium.

CONTRACTORS are strong for GALION ROLLERS

J. R. FORD COMPANY HAS 28 OF THEM!



Galion rollers are simple, easy to keep up, and we have been very fortunate in dealing with a dealer who carried a full line of parts and whose service was unparalleled if and when service was needed which was on rare occasions.

J. R. FORD CO., INC.
GENERAL CONTRACTORS AND ENGINEERS
LYNCHBURG, VIRGINIA
October 8, 1956

The Galion Iron Works & Mfg. Company
Galion, Ohio

Gentlemen:

We are glad to give you permission to use the picture of the Galion roller.

We like the Galion roller very much, and we have 28 of them - 7 three wheel, one trench roller, and 21 tandems.

Galion rollers are simple, easy to keep up, and we have been very fortunate in dealing with a dealer who carried a full line of parts and whose service was unparalleled if and when service was needed which was on rare occasions.

Yours very truly,

J. R. FORD COMPANY, INC.

James R. Ford
James R. Ford,
President

JRF:mf

TESTERS

For
**BLOCKS
CYLINDERS
CUBES
BEAMS
LINTELS
PIPE AND SLABS**

If it's a concrete tester
you need—get in touch with

FORNEY'S, Inc.
TESTER DIVISION
P. O. BOX 310 • NEW CASTLE, PA.

For more facts, circle No. 387

MAY, 1957



MOTOR GRADERS · ROLLERS

TRENCH ROLLERS PORTABLE ROLLERS 3-WHEEL ROLLERS TANDEM ROLLERS MOTOR GRADERS

THE GALION IRON WORKS & MFG. CO., General and Export Offices, Galion, Ohio, U.S.A.
Cable address: GALIONIRON, Galion, Ohio

For more facts, use Reader-Reply Card opposite page 18 and circle No. 388

HRB bulletin reviews all national research projects

"Highway Research Review, Number 4A", lists all national highway research projects in progress or reported by state highway departments, federal bureaus, colleges and universities, and other agencies to the Highway Research Board. The primary purpose of this bulletin, which is a supplement to Number 4, is to explain current research activities to the re-

search worker, and in that way avoid duplicating projects.

The bulletin contains the latest developments in aggregates, concrete, bridges, soils, roads, pavements, surveying, and traffic surveys.

Priced at \$1.60, the bulletin is available from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

NEW WYLIE ROADMASTER Asphalt Plant



Model 1520

- Fully automatic batching and asphalt metering cycle
- Rotary dryer with forced draft
- Twin-shaft pugmill with enclosed oil bath gear box
- Enclosed bucket elevator and reciprocating feeder
- 400 gallon asphalt tank
- Cyclone type dust collector

- ★ 15-20 Tons Hourly Capacity
- ★ Completely Mobile

The "1520" meets the demand for a complete self-contained, mobile plant, ready to operate in minutes right at the jobsite. Available also as a skid-mounted unit, with gasoline, diesel or electric power. The Roadmaster is the machine asphalt users have been waiting for—the asphalt plant that has everything.



Send for new 8 page, illustrated brochure

WYLIE MANUFACTURING CO., INC.

P. O. Box 7086, Oklahoma City 12, Okla.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 389



Electrode holder has all-glass insulation

■ A new electrode holder featuring all-glass insulators and spring cup is announced by Martin Wells, Inc. The Tong-Grip electrode holder delivers 300 amps on a heavy-duty cycle when connected to an 00 cable, the company reports.

The Tong-Grip has the patented feature of no current in the hinge pin or upper tong. Its wedge cable connector makes perfect and permanent connection on the first installation. The holder has only nine parts and can be assembled or dismantled in a few seconds the company states.

For further information write to Martin Wells, Inc., 5886 Compton Ave., Los Angeles 1, Calif., or use the Request Card at page 18. Circle No. 136.

Pa. pike section opened

The second section of the north-eastern part of the Pennsylvania Turnpike has been opened to traffic. The 47.6-mile stretch extends the \$200 million branch to the Wyoming Valley interchange, seven miles south of Scranton.

N. C. highway department issues new state map

A new four-color state highway map has been issued by the North Carolina State Highway & Public Works Commission. The map, which incorporates many route changes, has all primary U. S. highways and by-passes marked in red and the state's four-lane highways are designated in black.

For the first time, 15 roadside parks, built and maintained by the highway commission, are listed with their respective locations keyed to the map. The back of the map features 16 color pictures of typical scenes.

The map is available from the North Carolina State Highway & Public Works Commission, Raleigh, N. C.



"Pipe installation time and labor costs cut about 50% with Greenlee Pipe Pusher"

That's what a leading eastern utility reports as its experience with a GREENLEE Pipe Pusher on jobs as shown above. Let this remarkable tool make big timesavings and reduce job costs for you, too. With the GREENLEE Pusher, one man pushes pipe under streets, walks, floors, railways, lawns, etc. Eliminates extensive trenching and time-consuming tearing up, tunneling, backfilling, repaving. Often pays for itself on the first few jobs. Two models: No. 790 for pushing 3/4" to 4" pipe; No. 795 for larger pipe and concrete ducts.



POWER PUMP for all models of GREENLEE Pipe Pushers. Makes the toughest pushing jobs simple, fast for one man. Average pushing performance: two feet per minute. Write today for complete details on timesaving GREENLEE Hydraulic Pipe Pushers.



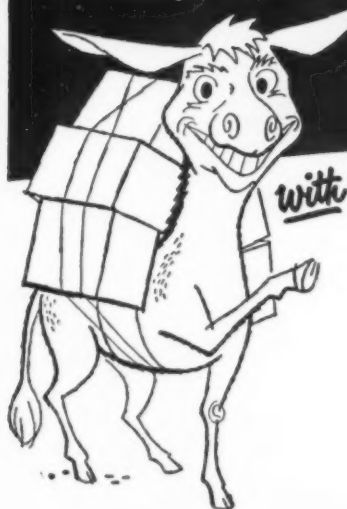
GREENLEE TOOL CO., Division of GREENLEE BROS. & CO., 2265 Columbia Ave., Rockford, Illinois

For more facts, circle No. 391

CONTRACTORS AND ENGINEERS



"Packy" says...



Selinsky did it again

with ROGERS "T" TRAILERS

This 60 ft. tank weighing 32 tons, poised quite a moving problem.

Henry A. Selinsky, Inc., of Canton, Ohio, solved it with planned load distribution and two Rogers T-15D trailers in tandem.

His method overcame the objections of the highway authorities and complied with the regulations. The move from Gussett Boiler Works in Canton, Ohio, to the ultimate installation sight at Barberton, Ohio, was made at speeds up to 30 m.p.h.

You, too, can do it with Rogers Trailers.



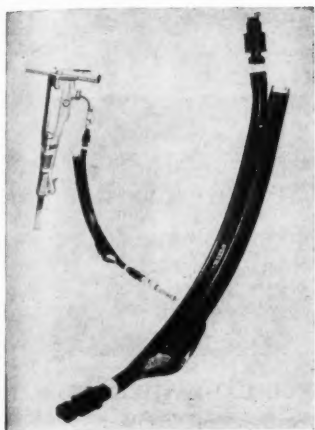
ROGERS LOW BED - HEAVY DUTY TRAILERS

ROGERS BROS. CORP.

ALBION, PENNA.

Export Office: 50 CHURCH ST., NEW YORK 7, N.Y., U.S.A. Cable Address: Brosites

For more facts, use Reader-Reply Card opposite page 18 and circle No. 390



The Bean lubricator is an attachment which provides a continuous flow of lubrication for pneumatically-operated tools.

Attachment continuously lubricates air tools

■ An attachment which provides continuous lubrication for pneumatically-operated tools is available from the Bean Rubber Mfg. Co. The attachment is of flexible Neoprene rubber construction for the introduction of a lubricant mist into the air line at the tool. An automatic venturi valve controls the lubricant flow into the tool's working parts while it is operating.

The oil reservoir holds an eight-hour supply of lubricant. The quantity of lubricant introduced into the tool is adjustable. The unit has been tested to 1,800 psi, the company reports.

The oil reservoir is filled by removing a screw cap at the top. The cap has an O-ring seal to hold pressure and prevent oil leakage. All working parts are easily accessible for maintenance. With the reservoir full, the lubricator weighs four pounds.

For further information write to the Bean Rubber Mfg. Co., 1623 S. 10th St., San Jose, Calif., or use the Request Card at page 18. Circle No. 70.

Congressman hits division of highway trust funds

An appropriation of \$365,000 for the Labor Department from the Highway Trust Fund has been strongly denounced by Rep. Hale Boggs (D-La.). The "raid" on the trust fund is contained in the 1958 appropriation bill for the Departments of Labor, Health, Education, and Welfare.

Rep. Boggs and highway users are protesting the proposal because Congress, by establishing the Highway Trust Fund, intended to prevent diversion of highway user taxes at the Federal level. This is consistent with the provisions of the Highway Act, where states can also be penalized for diverting highway user taxes. The act specifically states that the Bureau of Public Roads is the only agency allowed administrative expenses from the trust fund.

It was further stated that if the \$365,000 appropriation is passed, other branches of the government would be able to divert money from the Highway Trust Fund.

MAY, 1957



GOUGING OUT 8 linear feet of trench per minute, this specially equipped Cleveland 320 trencher is one of a pair working on the Greater Mussaib land reclamation project in Iraq. It has sloper blades, double conveyors, and flingers that throw spoil in thin layers on both sides of the canal to form access roads. About 1,000 miles of trench is being dug in some 800 square miles of desert for this job.

EVEREADY WILL CUT YOUR COSTS WHEN YOU WORK WITH CONCRETE



Model E-36 PD with "TIP-N-TURN"

EVEREADY POWR-DRIVE
CONCRETE SAW
14.6-25-36 H. P.

Use Dependable Eveready Blades and Saws for all concrete and asphalt sawing jobs.



EVEREADY TUFFIE
REINFORCED BLADES



EVEREADY READY-CUT
DIAMOND BLADES

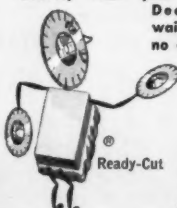
A Model for EVERY Need Select the Power for Your Job

For every concrete or asphalt cutting job, Eveready has the saw and blade to give low-cost, profitable performance. Big, ruggedly built to easily saw control joints on highways, turnpikes, airports. Maneuverable for all types of plant maintenance work... repairing, patching, trenching. Self-Propelled Powr-Drive on the Giant E-36 PD. Optional on the E-25 and E-15. Eveready Saws are built up to a Standard—not down to a price.

• New 4-Ply Reinforced Tuffie Abrasive Blades cut green concrete at 1/3 the cost. Even tough aggregate concrete can be sawed economically with Tuffies.

• Ready-Cut Diamond Blades cut green or cured concrete or asphalt faster, easier, longer. Eveready Blades fit all makes of Concrete Saws.

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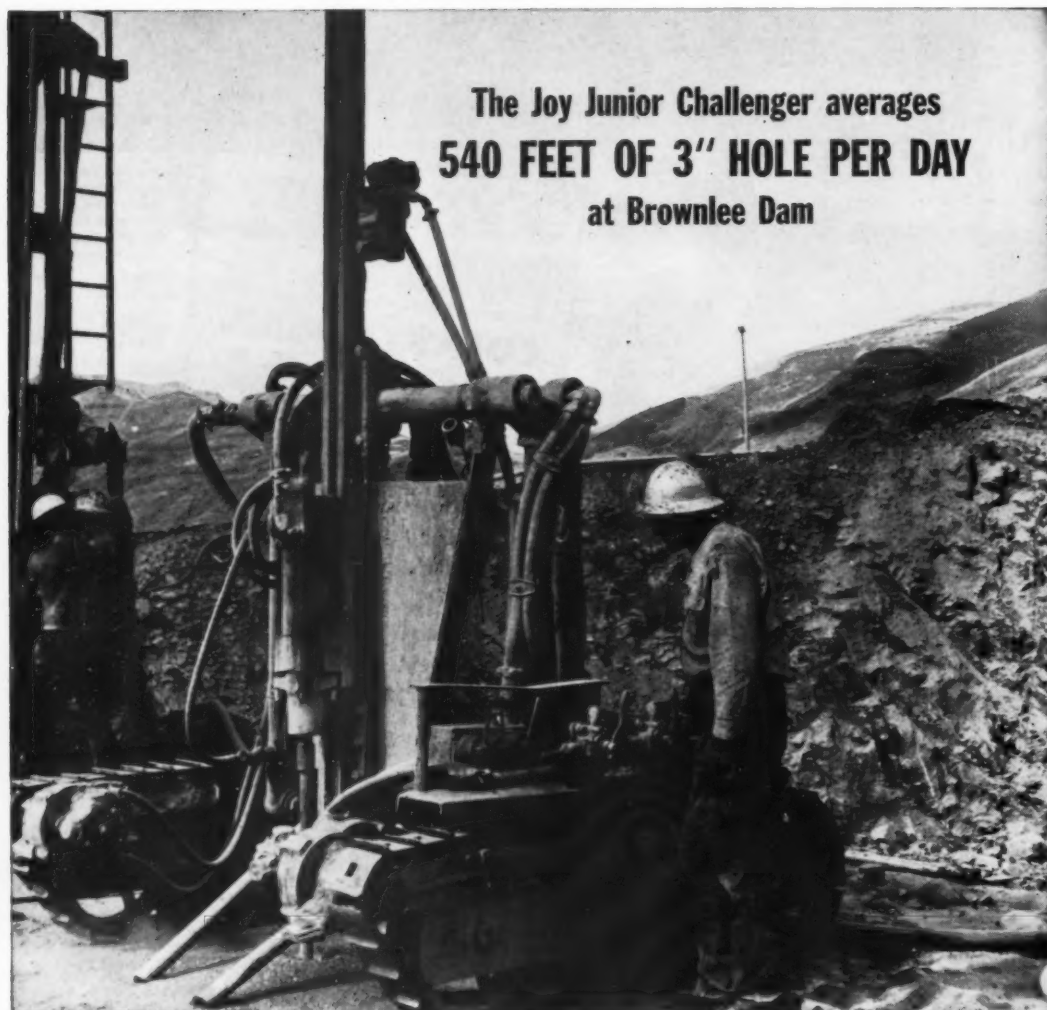
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The engineering department

Concrete finishing and waterproofing



by **GEORGE E. DEATHERAGE, P. E.**
construction consultant

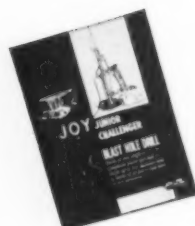


The Joy Junior Challenger averages
540 FEET OF 3" HOLE PER DAY
at Brownlee Dam

At a large project like Brownlee dam, a drill has to be versatile . . . move quickly, drill at any angle, have the power and rotation to punch holes through all kinds of formations.

In a 20 hour day, working six days a week, this Joy Junior Challenger has hammered out the average of 540 feet of 3 inch hole per day. This footage includes horizontal holes, vertical holes, and angled holes up to 4 inches in diameter. The drill has moved all over the job, and taken over in locations where other drills were having difficulty with penetration.

If you've got a difficult job coming up, better take a look at the drill that's really versatile, the Joy Junior Challenger. Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa. In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario.



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Labor costs for cement finishing and waterproofing are extremely variable depending on the types of concrete used, the weather, and screeding, troweling, and finishing.

Screeds, or temporary guide rails, set accurately to grade before a concrete slab is poured, serve as a base for the hand or power screed, or straightedge, and are an important item in securing good workmanship and reducing costs.

It is a poor and expensive practice to use a wood screed, which consists of wood stakes, driven in the ground with the top of the stake at grade, with wood strips nailed to the stakes. Wood screeds are usually spaced from 6 to 8 feet apart. After the concrete has been screeded off to grade, it is necessary to remove the screeds and stakes, and fill in the space they occupied with fresh concrete. With suspended slabs, upright blocks are substituted for stakes, but the same inefficiency results.

The best practice is to use heavy wire metal chairs which may be ar-

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CONTRACTORS AND ENGINEERS

This is the seventeenth of a series of articles on Construction Management by George E. Deatherage, P. E., construction consultant. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by Geo. E. Deatherage & Son, P. O. Box 921, Lakeworth, Fla. The manual is used in a training course for superintendents and project managers, and is directed primarily at those contractor employees who have reached the foreman level or its equivalent, and who need practical help in order to take complete charge of construction projects themselves.

ranged to receive a metal rod or small diameter pipe, which is set to grade. The small space left by the pipe or rod that is removed can be filled with mortar after the concrete slab has hardened sufficiently.

Numerous manufacturers of concrete accessories produce metal chairs of varying heights for this specific purpose, and the cost and installation by carpenters should be made a specific item in the estimate.

Effect of slump

While all concrete should be placed with as low a slump as possible for additional strength and to facilitate early floating and finishing of the surface, concrete should be fluid enough to be worked into place around the rods. When work is done on heavily reinforced construction, the lowest possible slumps should be used. Excess water is the basic cause for poor concrete and finishing.

The estimator should compile an estimated cost unit per square foot for finishing by dividing the contemplated production per man into his wages at the regular daily rate. From this he will find that his units are about half what is needed to cover the cost.

Where labor conditions permit, the use of mechanical vibrating screeds will allow a much lower slump to be used, with subsequent better work and lower costs. This applies on any class of work.

Protection in inclement weather, another item often overlooked by the average estimator, reduces the net profit. Allowances should be made under "Plant and Maintenance" for tarps and supporting structures, as well as for temporary heat in the fall and winter months. If the job has been properly scheduled, the times at which the concrete is to be poured will be obvious. Specifications permitting, some admixtures such as calcium chloride may be used to prevent or delay freezing.

Again, it may be quite economical to use high early strength cement to hasten the set and enable finishers to get on the work quickly. If it is quite obvious that if concrete work is to be done in the winter months, the estimator must provide money for the additional expense, either under

"Winter Conditions", or under some other heading.

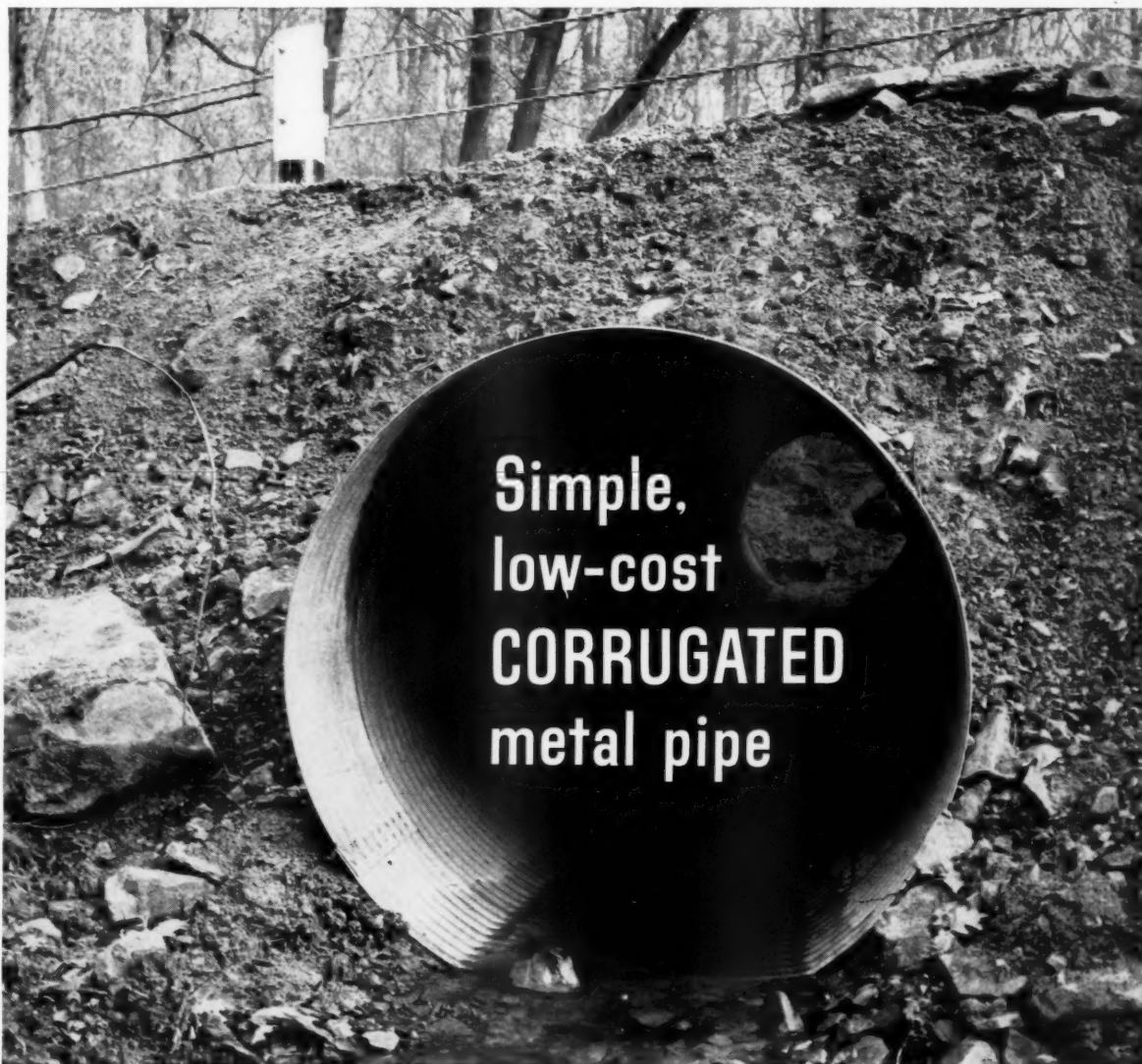
In bad weather, and where slabs are being finished in the open, there are bound to be times when a slab will "get away" from the finishers. Delays will occur due to shortage of men, slabs damaged by sudden showers, and insufficient tarps. In any case, the finished surface must be gone over again after it has hardened to the point that a workmanlike job cannot be done by hand methods.

In these cases a mechanical trowel

has the advantage of bringing the mortar to the surface when the slab is too hard to be finished with a hand trowel. Union rules in many areas forbid the use of these finishers on regular work, and permit their use only as a last resort. On work on any size, it pays to include one in the equipment list.

Monolithic slabs

In constructing a monolithic slab, the top of the concrete slab is finished without the addition of mortar or



Culvert on New Kensington, Pa. by-pass. Fabricated from USS Galvanized Corrugated Culvert Sheets by United Steel Fabricators, Inc., Wooster, Ohio. Installed by Adam Eidemiller Construction Company, Greensburg, Pa.

stands up under heavy loads!

Structures made from USS Galvanized Corrugated Culvert Sheets provide a permanent, speedy and economical means of handling road and highway drainage problems. They readily absorb the impact and vibration of modern traffic and can carry heavier loads than rigid-type structures.

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rain and waterway openings. These flexible structures with their heavy-duty corrugations can resist extremely large externally applied loads.

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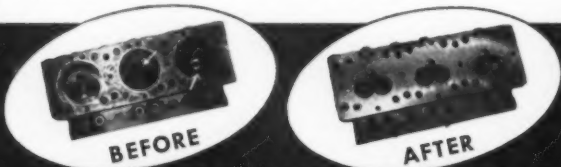
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KANSAS TURNPIKE: MARVEL OF FAST ROAD BUILDING

236 miles of super highway put through in 2 construction seasons—that's the engineering construction marvel of the \$140 million Kansas Turnpike which opened to traffic in October of 1956.

Super compaction equipment played a big part in this record building, too; the Freeto Construction Co., Pittsburg, Kans., and the T. L. James Co., Ruston, La., were but two of the turnpike contractors who relied on BROS 50-ton Roll-O-Pactors to obtain 100% AASHO densities on the top 18" of subgrade and 95% on the lower 18". Compaction was handled in 6" lifts.

Specifications called for three passes with the 50-ton rollers after specified densities had been reached. Because of soil variations, the CBR (California Bearing Ratio) varied between 50-75% on the subgrade.

FOR WIDE VARIETY OF ROCK, SOIL AND MOISTURE CONDITIONS

Roll-O-Pactor compaction results fulfill the strict design criteria written for the whole range of acceptable turnpike subgrade materials. Why? Because BROS compaction engineers grew up with heavy earthwork consolidation . . . developed and pioneered the vital 19° wheel oscillation and pitch control features of heavy rubber tire rollers . . . cooperated with federal and state engineers in proving the unmatched value of this equipment for consolidation and densification of subgrade materials.

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ROAD MACHINERY DIVISION
BROS Incorporated

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Top Photo: Freeto Construction Company's BROS Model 450 roller compacting subgrade on the Turnpike. Center: T. L. James Co. Model 450 compacting subgrade on Section 11 of the Turnpike. Bottom photo: Compaction on the same section with the BROS SP-54 Self-Propelled rubber tire roller.

(Continued from preceding page)

separate topping. In this class of work, the slab is floated to bring the mortar to the surface and finally finished to grade with the steel trowel.

There should be no need to add material costs to the labor units in this class of work. This method rarely works out in practice, as there will be times when the slab hardens too quickly, or areas are too rough to get a good finish without the finisher really bearing down on the trowel. It is here that some mortar, composed of fine screeded sand and cement, will be needed. Dry cement should never be added to the surface to take up water or to create a mortar, as the result will be crazing in fine cracks and a slab that will dust.

A separate or granolithic topping is applied as an independent mortar mix after the base slab has been poured. The thickness will vary from ½ to 1½ inches and may contain color or an admixture of metallic particles for a wearing surface. Such toppings are usually placed as soon as the water has dropped in the base slab.

If color or a patented wearing surface compound is to be added, the material prices and labor will need to be increased. Material costs will vary with the concentration of the admixture. There are many varieties of these admixtures, some with color and others without, and each estimating unit will have to be compiled in line with the specifications and current prices. Such toppings need to be applied very stiff, or streaking will result.

If the slab is to be marked off in squares with an edger, labor prices should be doubled. If non-slip aggregate is to be added, this will need to be calculated from manufacturers' current prices and specification requirements.

Cement base is estimated by the linear foot and most of the cost is in the labor. Temporary grounds may be of wood and set by the carpenter or they may be "stuck" with plaster of paris. In any case, setting grounds is part of the expense to be considered in compiling the unit cost. Not every cement finisher can run base, and the mechanics should be carefully selected for this work.

When work is done on stairs the treads are finished right after the pouring, but risers cannot be finished until forms are removed, which may be the next day. Riser work is a separate rubbing operation—usually with a carborundum stone.

Rubbed finish

Monolithic rubbed finish for vertical surfaces such as walls, exposed beams, and ceilings will depend on whether or not plywood forms or plain lumber have been used. Plain lumber leaves fins and these have to be chipped off and the area patched. In any case, it is an expensive operation that must not be underestimated. The use of new material for forms, and the use of plywood particularly, will reduce the cost tremendously.

One cause of extra finishing cost on work lies in the use of old and dirty forms. Care should be taken to clean and oil forms after every use, and allowance should be made in the estimate for this work. It is poor estimating practice to attempt to include the finishing cost in with the concrete placing cost, as finishing is a distinct separate operation.

Applied rubbed finish, a portland cement plaster coat, should be a separate item in the estimate, the quantities taken off in square feet or square yards. The mortar, applied with a trowel, is rubbed down with a carborundum stone, leaving a thin coated rubbed finish. One cubic yard of mortar ¾ inch thick will cover approximately 2,600 square feet.

CONTRACTORS AND ENGINEERS

Floor and pavement curing and protection should be applied as soon as the concrete has hardened sufficiently. The most simple procedure is to hose down the area frequently. Specifications usually require the use of waterproof paper covering; a covering of sawdust or sand; or the application of a sprayed-on waxy liquid. All are designed to hold the moisture in the slab.

Waterproof papers should be non-staining and the amount required can be figured from the area of the slab multiplied 20 per cent for lap. This type of covering is recommended on interior floors as it serves the double purpose of holding the moisture in the slab and protecting the finish. Cheaper curing processes are available if the floor or pavement does not need protection from abuse—or if the finish on slabs is located outdoors.

Waterproofing admixtures

Waterproofing admixtures may be added to the mortar or mix, and the job specifications will usually be definite as to what is to be used. If ready-mix concrete is used, arrangements can be made to have this added at the central plant. An addition of 10 per cent lime to the concrete is a very good waterproofing.

Treatment of foundation walls, both below and above grade, can be handled with brush, spray, or membrane coatings; protected membrane; cement plaster coatings; penetrative surface compounds; and double-wall and membrane.

If there is no definite specification, the type to use will depend primarily on the head of water to be combated and the liability of the treatment to damage.

Asphalt or pitch forms a tight protective skin when exposed to air and such materials are known as mastics. The modern practice is to use a heavy consistency mastic, which can be troweled on by one man at a rate of 500 to 600 square feet per day. This is reduced if the quarters are crowded and there is little room to work.

The estimator should check the covering capacity of these mastics, as it varies as much as 100 per cent per gallon. Local roofers will give a price for sprayed-on hot asphalt or pitches in lieu of the mastic if a cheaper job is required.

Membrane waterproofing consists of asphalt or pitch saturated felts mopped or sprayed on to the wall. Two layers are generally sufficient, but three are used where conditions are not favorable.

Where waterproofing membrane is liable to be punctured, due to settlement or movement of the subgrade, it can be protected by a 4-inch brick veneer laid up against it, the veneer resting on a projected footing. To the costs, one will need to add the additional brickwork. All of this brickwork, if below grade, should be set in cement mortar.

Cement plaster coats are generally done with a mortar consisting of one part cement and two parts sand, to which a waterproofing compound may or may not be added and applied in two coats. One cubic yard of such

mortar will require 1 yard sand and 12½ sacks of portland cement. One man should apply approximately 50 square feet per hour per coat.

Miscellaneous

Penetrative surface compounds are generally unsatisfactory below grade, but prove well above grade. All of them use gum, wax, or cement as a base; some are colored and others are transparent.

Liquid floor hardeners, applied by brush or broom after this work is completed, usually have the same base, magnesium fluosilicate. This can be purchased in powder or crystal form and dissolved in water—2½ pounds per gallon will cover about 90 square feet in three coats.

There are hundreds of different

kinds of floor hardeners, some of which are to be mixed in the topping and others to be surface-applied. For those specified, the estimator will simply have to consult the manufacturer for price, coverage, and the like, and compile a composite price per square feet in place.

Backpainting exterior walls to keep out dampness is done with waterproof paint, ordinarily with an asphalt base. There are also transparent coatings that serve the same purpose. One man should be able to backpaint 800 to 1,000 square feet per day.

Expansion joints for walks and floors on grade are generally specified as asphalt felt, and are estimated in linear feet. The width will be the thickness of the slab, and the thickness will vary from ½ to 1 inch. Cop-

per expansion joints for vertical walls are ordinarily special designs on which specific prices will need to be secured.

Waterproofed nailers, estimated per linear foot in place, are wood beveled strips set in a concrete slab or fill to take wood subfloor. Specifications limit the price as the treatment for waterproofing may be a simple brush coat of creosote. At times, the strips may need to be pressure-treated.

Various types of fills are used under tile and marble floors, on roofs for crickets, and between wood floor sleepers. Each of these types of fills—cinder concrete, perlite, and slag—will have to be built up into a composite price per square foot in place.

In most cases, these fills are thin and in hard-to-get-at places. The



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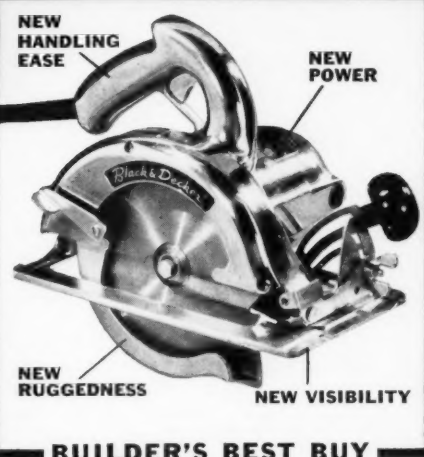
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labor involved is much greater than that required for placing ordinary concrete, and many times the work requires hoisting facilities. In some cases, the fill can be left under the screed, and at other times it must be floated or troweled, depending on the final finish. The unit price may require time for laborers, hoisting engineers, cement finishers, and carpenters setting guide screeds for grade. The materials can be cement and cinders; cement, sand, and cinders; slag in place of the cinders; or a lightweight material.

In computing unit prices for cement work and waterproofing, all possible contingencies must be considered in order that the final unit reflects actual job conditions. Some of these items are scale of wages and

supervision of overtime work; cost of screeds and labor setting time; varying material costs; protection of finished surfaces from damage; machine or hand mixing and hand finishing costs; curing costs; winter conditions; and the cost of special admixtures.

Other variables include the extra cost for small, cut-up areas; increased costs due to cramped quarters; the class of workmanship required; allowances for waste; runways for carts or barrows; transportation of materials; reinforcing required for fills; cleanup operations; and travel time for finishers.

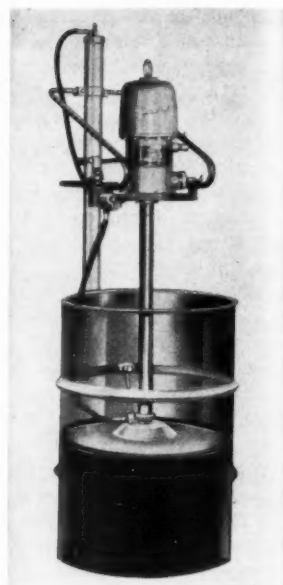
The experienced estimator will be able to visualize mentally all the required steps, operations, and possible contingencies to be provided for in working up the composite unit price.

The project manager or superintendent may not be compelled to make the detailed estimates on work of this kind, but he should check the estimator's unit to make certain that a necessary item has not been overlooked.

(Next month's article will deal with "The engineering department—carpentry and some specialties.")

Unit dispenses compounds from 55-gallon containers

■ A unit designed to dispense calking compounds, putties, semi-fluid sealers, adhesives, and similar materials that may be too viscous to be poured from their containers is available from Gray Co., Inc. The Graco Inductor dispenses the material directly



The Graco Inductor dispenses materials too viscous to be poured directly from their original 55-gallon drums.

from original 55-gallon drums.

The Inductor completely seals the material in its container, preventing contamination, spillage, channeling, aeration, and waste, the company states. It does away with the need for hand application of so-called unpumpable materials, according to the company.

The unit starts at the top of the material in the drum. Combined with an air-powered Graco pump, the Inductor literally sucks its way to the bottom of the drum, scraping the sides and completely removing the material.

Inductors are also available in half drum and five-gallon pail sizes. Graco pumps for use with the units are available in power ratios to meet all volume and pressure requirements.

For further information write to Gray Co., Inc., 1089 Sibley St. N. E., Minneapolis 13, Minn., or use the Request Card at page 18. Circle No. 81.

Earth drilling accessories

■ A catalog-packet containing descriptive literature on its line of earth drilling accessories is available from Mobile Drilling, Inc. The packet covers augers, core barrels, drilling heads and bits, winches, couplings, and other equipment.

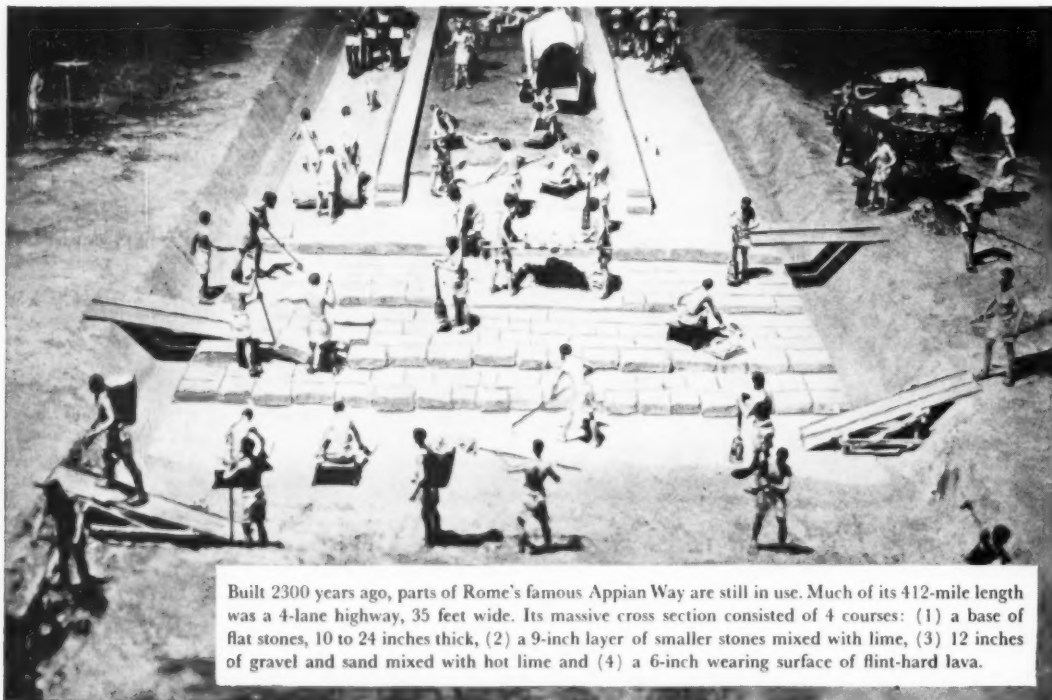
Also included is literature on the company's line of mobile rotary drilling rigs, as well as the story of Mobile's soil and foundation engineering service.

To obtain this catalog-packet write to Mobile Drilling, Inc., Dept. 19, 960 N. Pennsylvania Ave., Indianapolis 4, Ind., or use the Request Card at page 18. Circle No. 138.

Long Island link opens

New York's Long Island State Park Commission has opened a new link between the Northern State Parkway and Sunken Meadow State Park on the North Shore. The 7-mile spur, to be known as the Sunken Meadow State Parkway, was built under the supervision of the State Department of Public Works at a cost of \$11 million.

Naugatuck SURFA-SEALZ



Built 2300 years ago, parts of Rome's famous Appian Way are still in use. Much of its 412-mile length was a 4-lane highway, 35 feet wide. Its massive cross section consisted of 4 courses: (1) a base of flat stones, 10 to 24 inches thick, (2) a 9-inch layer of smaller stones mixed with lime, (3) 12 inches of gravel and sand mixed with hot lime and (4) a 6-inch wearing surface of flint-hard lava.

Photo courtesy Bureau of Public Roads, Dept. of Commerce

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IMAGINE THE COST of building highways like this today! Yet, for more than 2000 years, the construction methods of the Roman Empire's roadbuilders were the accepted standard. Only in the past century-and-a-half has there been a significant change. Modern methods, pioneered in England by John McAdam, discard the massive stone base and stress a relatively thin paved surface laid over a raised and compacted earthen subsurface.

Today, forward-looking roadbuilders are availing themselves of a more recent development which promises to further reduce the ultimate cost of highway construction and maintenance. They are adding to their bituminous surface courses small amounts of compatible *elastomeric* (rubber) hydrocarbons, such as Naugatuck's SURFA-SEALZ*. This involves no extra equipment... adds little to the total cost of highway building or resurfacing... promises substantially longer paving life and greatly reduced maintenance!

Write for complete details on SURFA-SEALZ, the modern roadbuilder's strongest ally in stretching highway dollars!

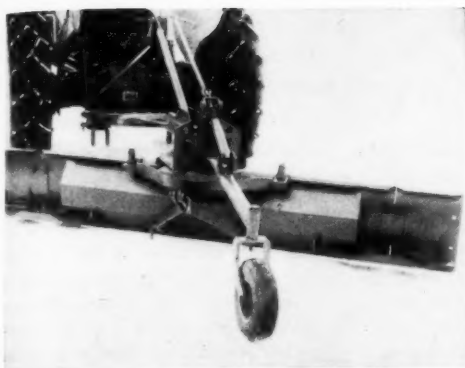
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For more facts, use Reader-Reply Card opposite page 18 and circle No. 399



One-foot extensions can be added to each end of the Arps Model AB-6 and AB-7 utility blades to widen the blades to 8 feet.

Extension pieces add 2 feet to utility blade

■ End extension pieces that will extend the length of a utility blade attachment to an over-all 8 feet are available from the Arps Corp. The extensions are contoured to fit the Arps Models AB-6 and AB-7 blades and are equipped with reversible cutting edges.

The extensions add one foot to each

end of the blade, giving it added capacity for moving loose dirt and snow. They are bolted to the blade and are easy to attach or detach, the company reports.

For further information write to the Arps Corp., New Holstein, Wis., or use the Request Card at page 18. Circle No. 42.

Gasoline-powered saw completely redesigned



■ A new version of the gasoline-powered Wright power saw is announced by the Wright Power Saw Division of Thomas Industries, Inc. The new model of the reciprocating blade action saw has been named the Rebel.

The front assembly has been redesigned to operate at top efficiency even in sandy soil areas, the company reports. The governor assembly has been redesigned to provide smoother and more efficient operation.

The saw, which weighs less than 25 pounds, has a 20-inch blade. The unit has a metallic copper finish.

For further information write to the Wright Power Saw Division, Thomas Industries, Inc., 410 S. Third St., Louisville 2, Ky., or use the Request Card that is bound in at page 18. Circle No. 69.

Heedless horsepower is a prevalent disease of the automobile age. Its symptoms are varied—the heavy foot on the accelerator; the eye fixed on the climbing speedometer; the hand on the horn; the mind idling while the car is in high. It caused 40,000 deaths in 1956.

POWER-PACK BACKFILLER



Patent No. 2,779,508

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 400

Light-duty scaffolding hold 50 pounds per foot

■ Light-duty scaffolding light enough so that one man can move an entire section but strong enough to support 50 pounds per square foot is available from Carmic Mfg. Co., Inc. Saf-T scaffolding is fabricated of high-carbon steel.

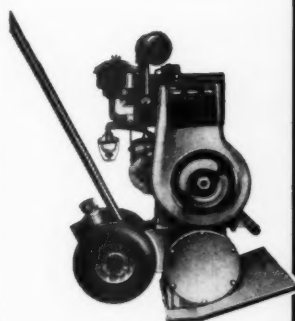
Saf-T scaffolding incorporates stainless steel spring lock assemblies. It is made with built-in ladders and built-in coupling pins. There are no loose parts and no tools required for erecting the scaffolding.

The scaffolding sections consist of four parts—two frames and two pivoted cross braces. Open stock design

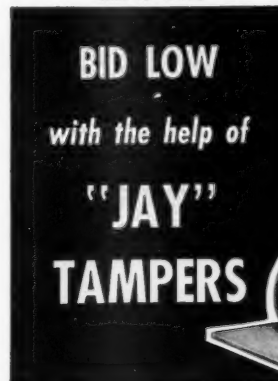
permits erection to any desired length or height. The scaffolding is dismantled by lifting the spring locks and removing the pivoted cross braces.

The frames are 4 feet wide and are available in 4 and 5-foot heights. Ladder frames measuring 5 feet x 29 inches are also available. Pivoted cross braces come in sizes to give 7 and 10-foot spacing between frames.

For further information write to Carmic Mfg. Co., Inc., 1745-53 N. Second St., Philadelphia 22, Pa., or use the Request Card at page 18. Circle No. 114.



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"JAY" Tamper model 36 with 30" blade

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TAMPERS

PROVED by engineers and contractors alike to be the fastest most dependable tamper of its size on the market today.

PROVED for maximum uniform densities in all types of soil in 48 states and 22 foreign countries.

PROVED for savings of 90% over old compaction methods. "JAY" Tampers produce up to 75 feet per minute of high density low cost compaction, are widely acclaimed for operator ease and maintenance costs as low as 80 cents per month per machine.

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Please send me additional information on the "JAY" TAMPER

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Street _____

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State _____

For more facts, use Reader-Reply Card opposite page 18 and circle No. 401



The Powermatic portable 34-inch trowel measures only 14 inches from the slab to the top of the engine, giving it an extremely low center of gravity.

Portable trowel features power blade adjustment

■ A portable 34-inch power trowel that features power blade adjustment to change to any blade position between float and finish is available from the Master Vibrator Co. The operator pushes or pulls a knob on the handle and engine power makes the adjustment he wants.

The Powermatic trowel measures 14 inches from the slab to the top of the engine, giving it an extremely low center of gravity. The unit features an automatic clutch that does not engage until it has reached operating speed. It is also equipped with a dead-

man control that idles the engine when the operator releases the handle.

A stationary guard ring permits the Powermatic to be used close to walls and other obstacles. It has a direct gear drive and fingertip control of speeds from 70 to 100 rpm. Power is supplied by a Briggs & Stratton engine. The unit is available with either three or four blades.

For further information write to the Master Vibrator Co., 1752 Stanley Ave., Dayton 1, Ohio, or use the Request Card that is bound in at page 18. Circle No. 101.

THE CASE OF THE TOOL THAT BUILDS EXTRA WORKING HOURS

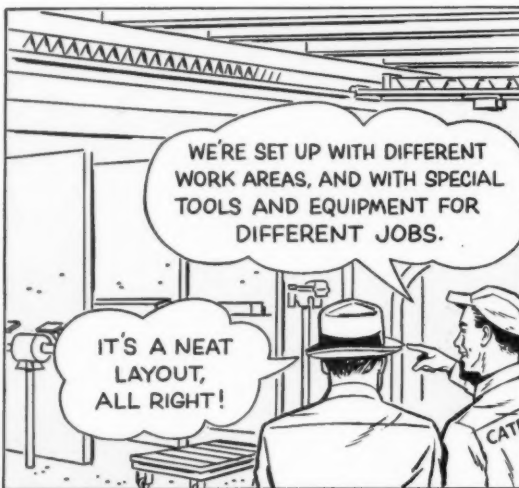


IN OUR SHOP WE CAN RESTORE ORIGINAL FACTORY SPECIFICATIONS IN USED ASSEMBLIES--AND DO IT FAST. NOW ON YOUR FINAL DRIVE JOB...

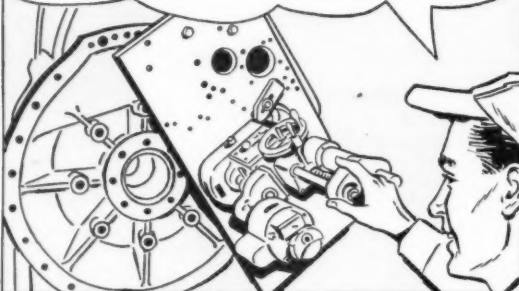


IT'S ONLY ONE OF OUR SPECIAL TOOLS THAT SAVE YOU TIME AND MONEY.

IT SURE TAKES THE RIGHT TOOLS TO DO THE JOB RIGHT!



...WE USED THIS SPECIAL BORING BAR FIXTURE. IT'S WITHIN 10,000THS FOR TRUE BORE ALIGNMENT ON ANY CAT-BUILT TRACTOR. OTHER SHOPS MUST SEND OUT AND HAVE AN ALIGNING FIXTURE MADE FOR EACH JOB, AND JIG BORING IS COSTLY.



CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.



Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 402

Engineering soil maps are topic of latest JHRP book

The Joint Highway Research Project has issued the concluding volume in a series on New Jersey's soil environment—"Practical Applications of Engineering Soil Maps" written by Wm. W. Holman, Robert K. McCormack, James P. Minard, and Alfreds R. Jumikis, and published by the Rutgers University Press. The JHRP, established in New Jersey in 1946 to do research in various fields of highway design and construction, is sponsored by the New Jersey State Highway Department, Rutgers University, and the Bureau of Public Roads.

Included in the book are explanations of the soil-mapping system, a description of the symbolic notations shown on the maps, practical uses of soil maps and reports, and the practical significance of the compound mapping symbols. Soil maps and reports can be used in initial reconnaissance for road alignment, highway design, preliminary planning of airports, and for subsurface investigations for foundations. The applications of the maps are described by examples, figures, and photographs.

Priced at \$3.00, the book may be purchased from Rutgers University, College of Engineering, New Brunswick, N. J.

EL&P predicts high 1957 construction budget

A 27 per cent increase in electric utility construction for 1957 is predicted by Electric Light & Power, Chicago, Ill. The forecast is based on advance reports from leading electric utilities in the country. It is also expected that the total industry figure for 1957 construction expenditures will reach about \$4.5 billion.

Many of the utilities expect to meet the anticipated peak demands without resorting to any load rejection measures, but the majority of the utilities are faced with delays in the construction program. The chief factor is the failure of suppliers to meet equipment delivery promises; secondly, the shortage of construction materials, and of design engineers and draftsmen; the lack of trained construction personnel; and difficulty in procuring rights-of-way.

CONTRACTORS AND ENGINEERS



The Ferguson 8 to 12-ton steel wheel roller features a torque converter, a two-speed transmission, and hydraulic steering.

SWENSON
SPREADERS

Spreads Salt or Chloride
for DUST CONTROL or
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information
**SWENSON SPREADER
& MFG. CO.**
Lindenwood, Illinois

Speed Sealcoating!

For more facts, use Reader-Reply Card opposite page 18 and circle No. 403

Dual-controlled tandem has torque converter

■ A tandem roller, which can be operated from either side of the operator's platform because it has two sets of controls and a movable seat, is available from the Shovel Supply Co. The Ferguson 8 to 12-ton steel wheel roller also features a torque converter, a two-speed transmission, and hydraulic steering.

The frame of the Ferguson roller is a one-piece weldment of steel plate and structurals. The rolls are made of carbon steel and machined for a smooth finish. The water tank has a capacity of 204 gallons. Two spring-tensioned scrapers and a fiber mat are provided for each roll. The rig operates at a maximum speed of 5.5 mph.

The roller weighs 17,530 pounds empty and 24,420 pounds with water ballast. Motive power is supplied by either a 73-hp gasoline engine or a 61-hp diesel engine. The fuel tank has a capacity of 26 gallons. The compression roll is 60 inches in diameter and the guide roll measures 48 inches in diameter. Both are 54 inches wide.

For further information write to the Shovel Supply Co., 4900 Hines Blvd., Dallas 21, Texas, or use the Request Card at page 18. Circle No. 128.

Power line to supply Peru refineries, mines

The opening of the \$31 million Paucartambo hydroelectric project of the Cerro de Pasco Corp., Oroya, Peru, was announced recently. The new plant will provide power for the copper, lead, and zinc refineries of the corporation, located in the Central Andes, and for mining activities in the same area. Initially, the Paucartambo plant will generate 65,000 kw of power. This can be increased to 100,000 kw with the addition of two more generators. The function of the new plant is expected to alleviate a power shortage which has curtailed Cerro de Pasco's operations during the past few years.

Ebasco Services, Inc., of New York, N. Y., furnished design and resident engineers for the project, which has taken five years to complete.



Bethlehem Cable Guard Rail Protects Motorists on Ohio Turnpike

Used as medial dividers and at bridge approaches, embankments and other danger spots along the new Ohio Turnpike, Bethlehem Cable Guard Rail forms a strong, effective barrier, with high resiliency and impact-absorbing qualities.

You can be sure of dependable protection for motorists when you install Bethlehem Cable Guard Rail. For this strong steel highway guard is designed for modern traffic, with its heavier volume and higher speeds.

Bethlehem Cable Guard Rail, with its special bumper-type bracket, is

simple in design, easy to install, and low in cost. It requires little maintenance, can be used with either steel, wood or concrete posts, and is furnished to comply with any state regulations. It comes with two, three or four cables, and with 1-, 1¼- or 1½-in. anchor rods. Bethlehem furnishes cable guard rail, together with steel posts, brackets, cable ends, anchor rods, cable splicers and fittings, all of which assemble readily on the job.

Have you seen our big illustrated booklet, "Steel for Highways"? It

describes fully the complete line of Bethlehem Steel products used in building modern highways. Contractors find it informative and helpful. You can obtain a copy by writing either to Bethlehem, Pa., or to the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



For more facts, use Reader-Reply Card opposite page 18 and circle No. 404



A haul road out of the huge excavation for the Old River Control project on the Mississippi below Natchez is graded by an Allis-Chalmers HD-9. The U. S. Army Corps of Engineers' project is designed to prevent the Mississippi from being diverted through the Old and Atchafalaya rivers. The cranes in the excavation are



loading Euclid bottom-dumps that haul to a levee section. The bottom-dump, unloading as it comes up onto one of the levee fills, is getting a helping push from an Allis-Chalmers HD-15 tractor-dozzer. The International TD-24 is shaping the levee.

FLECO®

... for low-cost land improvement



**MORE
PRODUCTION
FROM BOTH
ENDS AND
THE MIDDLE**

Pictured here are 3 Fleco specialized land clearing products designed to get more production from *both* ends of your tractor and your operator, too — Pull Stumper, Root Rake and ST Cab Guard.

With the Fleco Pull Stumper you drop the massive cast steel, hard-surfaced tooth over a stump or root, pour on the power and out pops the stump. Or you can cut deep on all sides of a tree, cutting through lateral roots, then spin your tractor around and push out stumps or trees with a front-mounted Fleco Rake.

Illustrated at the lower left is a Fleco Root Rake. Rake pushes out trees, stumps and roots, rakes roots from the soil, moves a big load, shaking it free from dirt, and stacks the material in dirt-free piles.

At the lower right is a Fleco ST Cab Guard — designed to keep your operator safer, more productive.

See your Fleco-Caterpillar dealer for complete details on the full line of Fleco Land Clearing Products.



Fleco Root Rake and Top Guards.



Fleco ST Cab Guard. Heavier HD Cab Guard available.

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CORPORATION**

Jacksonville, Florida

ROCK, ROOT & BRUSH RAKES
TREE CUTTERS • UNDERCUTTERS
CAB GUARDS • ROOT CUTTERS
DETACHABLE & PULL STUMPERS
TREEDOZERS • ROLLING CHOPPERS
HEAVY-DUTY TOOL BARS



Engineer school enlists aid of industry council

A new step in the direction of a solution to the problem of the nation's critical engineer shortage has been taken by New York City's Manhattan College with the formation of an Industrial Council on Engineering Affairs.

Designed "to bring business and education together so that they can jointly determine the steps to be taken in expanding the school's engineering program," the Council consists of 36 national and metropolitan area leaders representing commercial, civic, military, industrial, and professional fields. Charles E. Wilson, former president of General Electric Co., heads the new advisory body.

It is planned that the Council will work closely with the administration and engineering faculty of the college both in formulating curriculum policy and in obtaining additional research facilities, instructors, and funds for a broader engineering studies program.

Planned as part of the engineering development program is a two-year fund-raising campaign. Approximately four million dollars will be raised for use in implementing the engineering school's present physical facilities and faculty.

The Council is organized into an executive council and seven consultant groups particularly concerned with administrative, chemical, civil, electrical, mechanical, and nuclear engineering, and corporation affairs. The members of the council will meet regularly with the college administration and representatives of the board of trustees to steer the engineering program.

Among members of the Council are Emil Hugh Praeger, consulting engineer on such well-known projects as the Tappan Zee Bridge in New York State; David B. Steinman, designer of the Mackinac Straights Bridge and other famous spans throughout the world; and Frederick R. Zurmuh-

3,000,000

gallons of poured asphalt

...and no repairs to this distributor's **WISCONSIN Air-Cooled ENGINE**

Quite a service record for this model VG4D 36 hp. Wisconsin Engine! It powers a distributor built by Standard Steel Works, Inc., North Kansas City, Missouri. A total of 3,000,000 gallons of asphalt have been poured by the distributor without making a single engine repair. The Wisconsin Engine drives a 375 GPM asphalt pump through a two-speed transmission and operates a high capacity blower, servicing

two low pressure instant atomizing burners.

Don't be misguided. Here is positive proof that a Wisconsin Air-Cooled Engine is right for this kind of duty.

Write for complete details . . . bulletin S-143.

WISCONSIN MOTOR CORPORATION

MILWAUKEE 46, WISCONSIN
World's Largest Builders of
Heavy-Duty Air-Cooled Engines





The seven permanent wells that will rise in the upstream baffle blocks of the Old River control structure are stretched across the excavation, and during construction the Pamona 6-inch vertical turbine pumps discharge into a header carrying water to the river. Driven by A-C 75-hp internal combustion engines burning LP gas,



they have 3 or 4 impeller bowls set 39 feet deep. The Griffin 12-inch pumps, above, powered by General Motors diesel engines, are connected by headers to the nine wells that help hold down the hydrostatic head in the excavation area. A 10-inch standby pump is also connected to the wells.

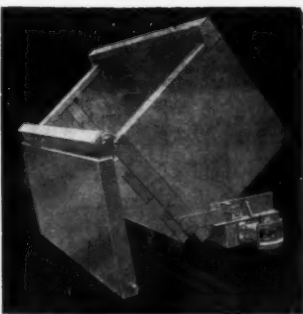
len, New York City Commissioner of Public Works.

Manhattan College, with a total enrollment of over 2,500, is conducted by the Christian Brothers. Brother Amandus Leo, F. S. C., one of the nation's best known engineering educators, is dean of the school of engineering.

American Sisalkraft buys Ohio contracting firm

Pavement Controls, Inc., Cleveland, Ohio, has been acquired by the American Sisalkraft Corp., Attleboro, Mass., through an exchange of stock. Pavement Controls are subcontractors on commercial concrete construction, specializing in the curing, joint sawing, and sealing of concrete slabs in highways and airports.

The acquisition will enable American Sisalkraft, manufacturer of reinforced waterproof paper products, to closely supervise and control in-the-field tests and experiments of concrete curing methods.



MAYO Tunnel Cars

... feature practical designs and rugged construction. All cars can be equipped with Mayo's safe, automatic couplers.

- Side Dump Car (shown) has 2 1/2 cu. yd. capacity, 24" gage.
- Rocker Dump Car. Ideal for sticky muck or wet concrete. 1 cu. yd. capacity, 24" gage.
- Tunnel Car. Box body is removable and may be hoisted to surface to be dumped into truck. 1/2 to 2 cu. yd. capacity, 18" or 24" gage.

FREE Bulletin No. 18 shows car details; No. 21 illustrates Automatic Coupler.



MAYO
TUNNEL AND MINE
EQUIPMENT
LANCASTER, PENNA.

For more facts, circle No. 407

MAY, 1957

CONSTANT BLADE POWER



6-D & 7-D SERIES MOTOR GRADERS

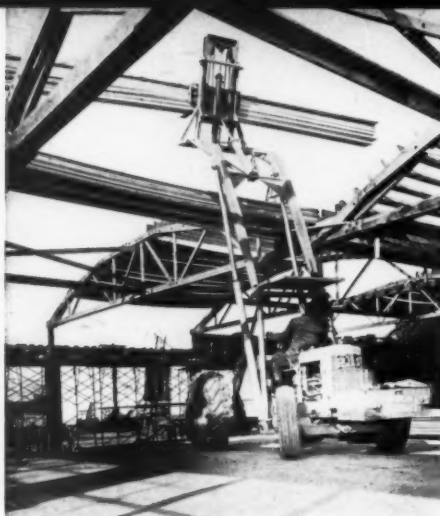
The tail-shaft governor on the Huber-Warco 6-D & 7-D motor graders automatically adjusts the engine RPM to meet load conditions. This assures constant power at the blade for a greater work volume. Torque-converter and power-shift transmission are standard. See your nearest Huber-Warco distributor for details.

HUBER-WARCO COMPANY • Marion, Ohio

For more facts, use Reader-Reply Card opposite page 18 and circle No. 408



Reaching up, an H-5 Hydrocrane lifts Flexicore sections to men working on the third floor addition to a Milwaukee high school. Price Erecting Co., Milwaukee, has the job.



An inside job is performed by this Econmobile at the Bigelow rug plant in Hackensack, N. J. Among other duties, it lifts lumber to crews working on the roof, as shown here.



Completing 224 feet of line daily, this Loran 50 sets pipe for a flood control channel-water line in Wichita, Kans. It uses a Hendrix 1½ yard dragline bucket.

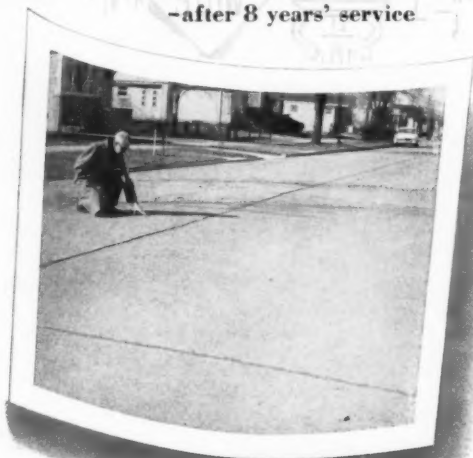
Which picture looks like your streets?



cured with water and tarp—after 1 year service



Cured with Velsicol concrete curing compound—after 8 years' service



The best concrete—all of the quality materials and labor can be wasted if it is not cured properly. Protect your investment by specifying Velsicol's concrete curing compound resins in your next bid or contract and be sure of lasting results! Velsicol concrete curing compound resins work better because they insure stable formulations—both pigmented and clear. They form a moisture-proof skin that makes freshly poured concrete cure with uniformly greater hardness on the bottom, center and surface of the concrete area. Surfaces cured with Velsicol concrete curing compounds present no problems for subsequent paint coatings. Greater strength, plus time and labor savings in application mean lower costs and taxpayers money saved.

WHERE VELSICOL CONCRETE CURES ARE USED—streets, highways, dams, bridges, buildings, etc.
Get the facts, without obligation—A Velsicol representative will be glad to relate our work to your product needs, without cost or obligation.

VELSICOL CHEMICAL CORPORATION

VELSICOL

330 East Grand Avenue, Chicago 11, Illinois



LOOK FOR THIS MAN

Your Velsicol representative... a qualified chemist who will help you make better products for less!

Velsicol does not manufacture concrete curing compounds, but does manufacture the resins for them.

VELSICOL CHEMICAL CORPORATION

330 East Grand Avenue, Chicago 11, Illinois

- ☐ Please send a sample for pilot plant use.
- ☐ Please have a salesman call to discuss your concrete curing compounds.
- ☐ Please send technical literature.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____

ZONE _____ STATE _____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 409

Highway program requires 22½ million tons of steel

Over the next 13 years, the structural steel industry will have to fabricate 22½ million tons for the national roadbuilding program, according to the American Institute of Steel Construction, Inc. These large requirements will be chiefly for highway bridges.

Greatly expanded rolling facilities for structural shapes by the steel mills will enable fabricators to meet their commitments, the Institute reports. By mid-1957 one million tons of added structural capacity will be available; 90 per cent of this will be in wide flange shapes. By 1960 another 1½ million tons of structural shapes will have been added, bringing the total expansion to 2½ million tons annually.

The Bureau of Public Roads estimates that 1,531,000 tons of structural steel will be required in 1957. This is only 631,000 tons above the actual bookings of the industry for



Katolight Portable POWER PLANTS

With instant, dependable electrical power on the job, work speeds up... costs go down. Katolight Portable Plants give your crews "plug-in" electricity anywhere, whenever they want it... power to operate all types of electrical tools or for steady bright flood lighting. Sizes and models for every portable, standby or continuous use from 350 watts to 75 KW. Up to 500 KVA on request.



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CONTRACTORS AND ENGINEERS

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NESOTA

MEERS



With salt seeping to the surface in the Lower California peninsula in Mexico threatening cotton growing there, drainage canals are dug by draglines such as this Manitowoc, so that the land can be flooded to dissolve and wash away the salt. Machinery has to be greased hourly to prevent corrosion.



Compaction of earth near an overpass on the Fresno Freeway in California is handled by an Ottawa Hydra-Way on a Drott Skid-Shovel. The rig operates where it is impossible for sheepfoot rollers to work. The overpass is one of seven in the \$1¼ million Freeway contract held by Gene Richards, Inc., Fresno.

bridge work in 1955. In that year total industry bookings were 3,696,000 tons, and about 25 per cent was used in bridge work.

Between 1960 and 1967 the Bureau of Public Roads expects its requirements to be about 1,785,000 tons annually, an increase of 254,000 tons over the 1957 figure.

New section added to Baltimore Beltway

Construction has begun on a new 2-mile section of the Baltimore Beltway in the Towson, Md., area, it has been announced by the Maryland State Roads Commission. The new highway stretch will consist of two 34-foot lanes divided by a 16-foot median strip. The builder will be Williams Construction Co., of Baltimore, whose low bid for the project was \$2,827,073.

The Beltway, a limited-access dual highway, will form a 35-mile arc around the city of Baltimore. The total cost is estimated at \$67 million.

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CONCRETE
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many types
of drilling
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May be used singly or in multiples



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E. A. ROGERS COMPANY
P.O. Box 1016, Grass Valley, Calif.

For more facts, circle No. 411

MAY, 1957

THE OLIVER SUPER 88



"Saves as much as 50% over other equipment"

On this big \$15,000,000 shopping center project, Jos. L. Muscarelle, Inc., well-known contractor of Maywood, N. J., has an Oliver 88 on a 5-day-a-week schedule. Working right through the winter—and in frozen ground—the 88 handled all trenching for sanitary sewers, water and electric lines and spot excavations as well as all backfilling. Odd jobs include loading trucks with sand at a nearby pit, as seen above.

The 88 is also used to excavate in cramped areas where steel beams have been erected—and where larger machines can't operate. Here, too,

the compact, powerful Super 88 has set up some amazing cost records.

Averages 550' per day of 5' trench

So far, the 88 has dug over 25,000' of trench ranging from 3' to 11' deep. Average production for 5' trenches—at random lengths, in all directions—totals 550' per day. Cost records show that the Oliver 88 saves

as much as 50% in over-all costs over other ½-yd. equipment for this type of work. And the user reports, "No repairs, no breakdowns since the Oliver Super 88 was purchased"—8 months ago!

Ask your Oliver distributor for facts about the Super 88. Or write us for literature.

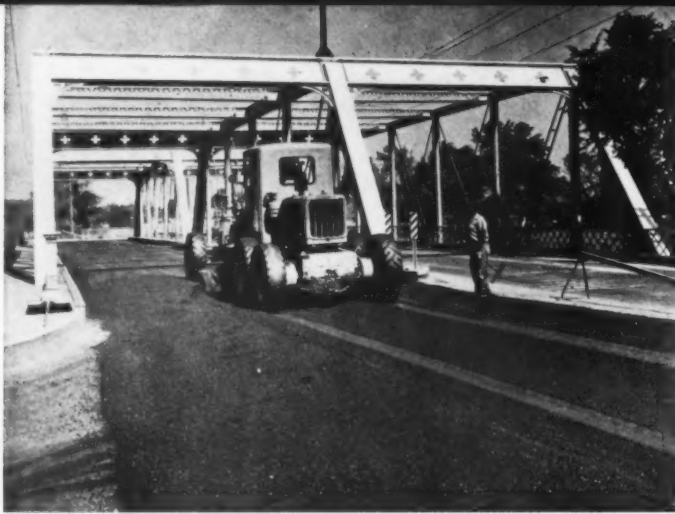


THE OLIVER CORPORATION

400 West Madison Street, Chicago 6, Illinois

a complete line of industrial wheel and crawler tractors and matched allied equipment.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 412



A big improvement is made on the four-lane 38th St. Bridge across the Platte River in Denver, Colo., as a Cat motor grader levels hot-mix for the resurfacing job. Since vibration made it difficult to keep a wearing surface on the timber deck, welded wire fabric was stapled to the bridge floor to strengthen the new surface.



Maneuvering through water-soaked clay, a Euclid scraper gets a push-loading assist from a Euclid TC-12 as it picks up fill for an improvement to U. S. 40 near Troy, Ill. The rigs are being used by S. J. Groves & Sons Co., Springfield, on a job requiring 500,000 yards of fill.



ARPS TRENCH HOG Digs up to 800' an Hour At Lower Cost per Foot

Now you can handle those profitable trenching jobs without a sizeable investment in large, unwieldy equipment! A tractor-mounted Arps Trench Hog will give you big trencher performance and capacity at only a fraction of the cost.

Along with peak capacities up to 800' per hour, you get unsurpassed mobility — moving from one job to the next at the speed of the tractor itself. The Trench Hog is easy-to-handle — one-man operated for greater economy. Has rugged, all-steel frame; anti-friction bearings; extremely precise hydraulic depth control and independent drive wheel control for accurate straightaway and curved digging; seven digging speeds with depth capacities of 3½', 5½' and 7'; quick-change cutters 6" to 20" wide; special optional cutters for frozen and rocky soils; boom which raises to approximately 90° angle when traveling.

ARPS Trench Hog—Best For Any Trenching Job

- Water Mains
- Septic Tank Laterals
- Foundation Footings
- Gas Lines
- House Service Lines
- Drainage Ditches
- Sewage Ditches
- Clogged Lines and Broken Mains

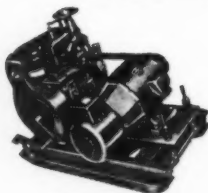
Send for free literature and detailed information. Write to Arps Corporation, New Holstein, Wis., Dept. CE.

ARPS
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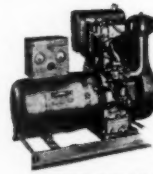
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For more facts, circle No. 413

PIONEER GEN-E-MOTOR



MODEL SS 4071
belt driven plant
6500 Watts



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model, 380
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Generators • Electric Generating Plants • Power Lawn Mowers
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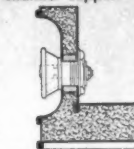
HORTON WATER COOLERS



Hold Down Rack



Interlocked
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Chrome-plated Spigot

ORIGINATORS OF THE RECESSED SPIGOT

HORTON water coolers are made of the finest copper alloy galvanized steel—designed and built with rugged construction to withstand abuse and give maximum protection against leaks. STANDARD coolers are made with a dead air space insulation between inner and outer walls.

HEAVY DUTY coolers are fully insulated with ground cork between the inner and outer liner.

Available in following sizes 1½—2—3—5—10—15 gallon

SNELLING MANUFACTURING, INC.

P. O. BOX 14503

HOUSTON 21, TEXAS

For more facts, circle No. 415

Senate proposes limiting billboards on highways

The Senate Roads Subcommittee has proposed legislation that would prevent the erection or maintenance of advertising signs and displays on the new interstate highway system. The plan calls for a clear channel of 750 feet on each side of the road, with the exception of directional or official signs required by law; signs advertising the sale, lease, or activities on property on which they are located; and signs on zoned industrial or commercial land.

Under the plan, states that do not enter the agreement would be penalized by withholding 5 per cent of the federal aid. States would be given until July 1, 1960, to make the necessary law changes without losing 5 per cent, even though the project was completed and all vouchers paid prior to that date. On other projects the penalty would not apply if the state agreed to control advertising within two years after execution of the project agreement.

Forces against such legislation include the outdoor advertising industry, labor unions, hotels and motels. Garden clubs, and several naturalist and civic groups are the proponents. Both sides use the same basic arguments—beauty, safety, and economics—to their own advantage.

Prestressed concrete parley slates speakers, sessions

The World Conference on Prestressed Concrete, sponsored by the University of California, will take place in San Francisco's Fairmont Hotel from July 29 through August 2. The chief speaker at the conclave will be Wayne F. Palmer, whose firm designed the 24-mile Lake Pontchartrain Causeway in Louisiana. Palmer will report on how his firm used mass production methods to complete the five-year project in 14 months.

The conference will feature about 70 papers on precast, prestressed members, prestressed thin shells and slabs, and research, design, and construction in various countries. Panel discussions will be conducted in materials, techniques, production, and design. Exhibits of machinery, equip-

CONTRACTORS AND ENGINEERS



Playing a big part in helping to fend off a cement shortage is this P&H Model 1600 electric shovel working in the quarries of one of the country's leading cement producers. The 6-cubic-yard rig and nine other similar shovels make up a fleet setting a production record in the quarries.



Boulders, mud, and debris are nosed out of Buffalo Creek by an International TD-24 tractor with dozer during the channel-widening operation on the \$102,000 flood control project near Elma, N. Y. Bullock Construction Co., Lockport, N. Y., is moving 20,000 yards of material to build up the banks.

ment, tools, prestressing wires, anchorages, and related materials by American and foreign suppliers will also be presented.

Cranes and excavators

■ The complete line of lifting, excavating, and material-handling equipment manufactured by the Schield Bantam Co. is covered in a catalog from the company. Included is information on backhoes, clamshells, cranes, draglines, magnet cranes, pile drivers, and shovels.

A section describes the applications of Bantam equipment in such fields as general excavating, pit and quarry operations, steel erection, and road and runway construction. Another section gives illustrated job reports concerning Bantam equipment on various construction projects.

Self-propelled rubber-tire and crawler-mounted carriers are shown and described along with three sizes of truck carriers.

To obtain Form 156 write to the Schield Bantam Co., Waverly, Iowa, or use the Request Card at page 18. Circle No. 85.

One-man concrete vibrator has more powerful motor

■ A one-man concrete vibrator, the Wyco Junior, is now available with a redesigned, more powerful motor which permits the use of extension shafts up to 21 feet long according to Wyzenbeek & Staff, Inc. In addition, a mercury switch which automatically shuts the vibrator off when it is not in use is now available optionally.

For further information write to Wyzenbeek & Staff, Inc., 223 N. California Ave., Chicago 12, Ill., or use the Request Card at page 18. Circle No. 82.

Black & Decker appointee

The Black & Decker Mfg. Co. Ltd., Brockville, Ontario, Canada, has a new general manager in Drummond R. Stewart. He will have charge of operations of the portable electric tool company, a Canadian of Black & Decker Mfg. Co., Towson, Md. The appointment came after a recent B & D expansion in Canada.

Double your secondary crushing capacity with a CEDARAPIDS PORTABLE PRIMARY

...and get all these other advantages!

- Work pits with high percentages of oversize
- Handle previously rejected boulders or big rock
- Meet 100% crushing specifications
- Open up pits considered unworkable or exhausted
- Convert your gravel plant to a rock plant



IT'S A PROVED FACT!

With a Cedarapids Portable Primary of the size and type to fit your conditions to handle the heavy crushing load ahead of your secondary equipment, you can double your plant capacity!

It adds a third stage of reduction to your operation, permitting your secondary crushers to handle twice as much material. It reduces the circulating load. More material will be taken off by the screen in your secondary plant before it reaches the crusher.

Equipped with a vibrating grizzly or scalping screen, your Portable Primary by-passes fines, sand, chips or dirt to prevent choking of the crushers.

You can turn all pit-run material, even big boulders, into specification 100% crushed aggregate. You'll have the capacity and flexibility to handle a wider variety of jobs... open up deposits considered unworkable because of excessive oversize or fines, re-open pits thought to be exhausted, operate in pits or quarries closer to the job to save hauling costs.

THERE'S A SIZE AND TYPE OF CEDARAPIDS PORTABLE PRIMARY FOR EVERY PRIMARY REDUCTION JOB

Single Jaw Crusher

15" x 24" 25" x 40"
22" x 36" 30" x 40"

Twin Jaw Crusher

18" x 36"

with low-cost Vibrating Grizzly

Increases output of primary crusher up to 25% by by-passing fines before they reach the crusher. Three sizes available with single or double deck.

with Scalping Screen

48" x 6' horizontal vibrating screen between feeder and crusher increases production in pits with low percent of crushing, or where specifications require 100% crushed particles.

Portable Double Impeller

Impact Breakers

30" x 42" 36" x 45"

With a reduction ratio of 20 or 30 to 1, this unit assures high capacity of desirable cubical shaped aggregate, which needs little or no further reduction.

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U. S. A.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 416



The Barber-Greene crawler-mounted wheel-type Model 774 ditcher digs to 5½ feet at speeds up to 28 fpm. Maximum digging width is 30 inches.

Ditcher's conveyor driven by two hydraulic motors

■ A crawler-mounted wheel-type ditcher with an 8-foot spoil conveyor driven by two hydraulic motors is announced by the Barber-Greene Co. The conveyor's direction of belt travel is instantly reversible and its belt speed can be varied from 200 to 650 fpm, the company reports.

The Model 774, featuring a 5½-foot digging depth, digs from 18 to 30 inches wide in one-inch increments. Power to the digging wheel is transmitted through a single, telescoping drive shaft equipped with a universal joint at both ends. A floating differential, which raises and lowers with the wheel, transmits power equally

and evenly to a double chain drive on the wheel.

The forward crowding speeds on the unit are controlled through a patented Hydracrowd hydraulic drive. Using Hydracrowd, the operator, by moving a single valve, can instantly select a range of forward speeds from 0 to 28 fpm. These speeds are independent of the digging wheel speeds, which are controlled separately through a mechanical transmission.

For further information write to the Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill., or use the Request Card that is bound in at page 18. Circle No. 74.

ROSS PORTA-PLANT



TRAVEL POSITION, the New ROSS PORTA-PLANT (Pat. Pending), shown above, is a new concept in portable concrete batching plant. Designed to produce 200 cubic yards of concrete per 8-hour day, and suitable for large jobs as well as small, the plant can be easily transported at normal road speeds by a half-ton pick-up truck.

DESIGNED BY A READY-MIX OPERATOR ... COMPLETELY ENGINEERED FOR READY-MIX PRODUCERS

Ideal for the large job, the ROSS PORTA-PLANT provides efficiency for the small producer. Engineered for feeding with any front-end loader and for sack cement, the ROSS PORTA-PLANT is easy and simple to operate for maximum performance. Easily moved along the highway, at normal truck speed, a one-half ton truck is sufficient for transporting. THE ROSS PORTA-PLANT is ready to operate within five minutes after arrival. It is sturdily built for many years of trouble free use.

CONDENSED SPECIFICATIONS

POWER: 9 hp air-cooled gasoline engine with reduction gear. Mounted for easy starting or servicing.

CONVEYOR: Sealed, troughing and return carriers, 24" 4-ply belt with housing.

BIN: 5 cubic yard, heavy gauge steel bin; locks for traveling.

SCALES: Cardinal 3-beam: 10,000 pound, 8,000 pound, and 3,000 pound with over and under indicator. Fully visible to operator.

HEIGHT: Extreme height at bin 7'-6".

CONTACT US FOR THE NAME OF THE DEALER NEAREST YOU

ROSS PORTA-PLANT

Box 446

Phone 2697

Brownwood, Texas

For more facts, use Reader-Reply Card opposite page 18 and circle No. 417



The CMC Model 550 Transcrete truck mixer is rated as a mixer at 5½ cubic yards and as an agitator at 6 to 6½ cubic yards.

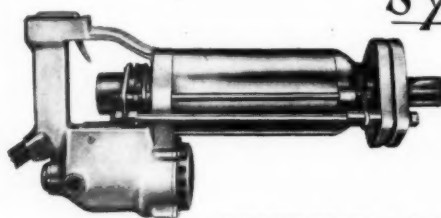
Add 5½-yard model to truck mixer line

■ The addition of the Model 550 Transcrete to its line of truck mixers is announced by the Construction Machinery Co. The new model has a drum volume of 243 cubic feet. It carries a mixer rating of 5½ cubic yards and is rated to carry 6 to 6½ cubic yards as an agitator.

The Model 550 is available with optional Ford or Chrysler separate en-

gine power. It is also offered with the CMC truck engine drive. Among its features are floating drive, a swing-out hopper, and a low center of gravity.

For further information write to the Construction Machinery Co., 447 Vinton St., Waterloo, Iowa, or use the Request Card at page 18. Circle No. 98.



SYNTRON

ELECTRIC HAMMER DRILLS

The only Electric

Hammers available

with automatic bit

rotation

SYNTRON Electric Hammer Drills are designed for fast easy drilling in concrete. SYNTRON'S exclusive automatic rotation of drill bits provides ease of handling in any drilling position. Constructed for long, dependable service, employing the electromatic principle, they will maintain their efficiency with a minimum of maintenance. Available in sizes to meet every drilling need. Capacities from ⅜" to 2" diameter holes.



GASOLINE
HAMMER
ROCK
DRILLS

VIBRATORY
COMPACTORS



MASS
CONCRETE
VIBRATORS



Write for complete tool catalog — FREE!

SYNTRON COMPANY

227 Lexington Ave.

Homestead City, Pa.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 418

CONTRACTORS AND ENGINEERS



Weight loads imposed on the main bearing shaft of conventional horizontal generators are transferred to the tubular framework of the Thor vertical-shaft generator.

New generator features vertical shaft design

■ A 1,500-watt portable electric generator featuring a vertical shaft design is announced by the Thor Power Tool Co. Two models are available—one for alternating and one for direct current. Each provides 13 amperes of 115-volt current for the operation of drills, saws, hammers, concrete vibrators, and other construction tools.

With the vertical shaft, the entire weight of the generator is supported by the tubular framework. Weight loads normally imposed on the main bearing shaft in conventional horizontal designs are shifted completely to the framework. Since the engine main bearing only has to turn the armature without having to support it as well, more efficient service and longer life can be expected from the unit, the company states.

The generator weighs 95 pounds and is approximately 2 feet tall and 2 feet in diameter. The unit is powered by a four-cylinder air-cooled engine with an automatic rewind starter. A toggle-type ignition switch eliminates shock danger and the inconvenience of shorting straps. Two plug-in outlets are provided.

For further information write to the Thor Power Tool Co., Aurora, Ill., or use the Request Card at page 18. Circle No. 19.

N. C. Highway Commission starts training program

The North Carolina Highway & Public Works Commission has started an in-service training program for engineers in each of its 14 highway divisions. The courses will be taught in the field, with a minimum amount of time in classrooms, and will continue for a period of 24 weeks.

Classes will be limited to 12 men who have at least six months' highway service. The men will be selected by the division engineer, in cooperation with the resident engineer, on the basis of ability and potential for development.

The Highway Commission is currently developing an in-service training program for young graduate engineers. During a 27-month job course, each trainee will spend several months in nine key highway departments learning the various phases of highway work.

CRANES DRIVE SHEETING for and clam out some of the 34 cofferdams being built across the Mianus River in Connecticut so that foundation work can be done for a steel bridge carrying six lanes of traffic for the Connecticut turnpike. L. B. Foster sheet piling, re-used as many as four times, is being driven 50 feet through mud, sand, gravel, and boulders for the cofferdams which range from 15x15 to 213x27 feet.



6 FACTS

to consider before
you buy any
heavy-duty tractor

Purchase of a modern, heavy-duty tractor is a major investment — one to be carefully considered. You want to be sure your new tractor fills today's need for speed and mobility ... as well as power and traction. Check these 6 important performance factors before you buy:

1. On dozing operations, your tractor operator's probably shift gears twice per minute of operation 100 times in a 50-minute hour, 1,000 in a 10-hour day. Time studies indicate you lose 5 seconds (plus momentum) on each of these gear shifts. Letourneau-Westinghouse Tournatractor® has instant shift through constant-mesh transmission, therefore can give you a plus of 5,000 seconds or 80 minutes production time in a 10-hour day!

2. Drawbar ratings on crawler tractors are made on basis of clean tracks and rollers. You have only to look through the tracks at your pan and guards to realize that these theoretical ratings are never available on your actual dirtmoving operation. Power used in grinding sand, rock, dust, and mud in moving parts of the track assembly is not available for moving dirt.

3. When you compare maintenance costs try to check on how many MILES you get on a set of tracks. On fairly rough work, owners usually replace a set of tires in from 3,000 to 5,000 hours. At an average travel of six miles each



hour this represents from 18,000 to 30,000 miles of Tournatractor travel. On an average, we think you will find your mileage on a set of tracks will show less than half your mileage on a set of rubber tires. Incidentally, combined cost for labor and parts for complete track rebuilding is more than double that for recapping a set of tires. A complete set of tires can be replaced in a few hours; reconditioning a set of tracks takes at least double that many days of hard work.



4. Now offered, as optional equipment, are 26.5 x 25 wide-base tires for Tournatractor. These tires give about 20% more traction area. They are recommended for use wherever extra flotation is needed for soft going, or where extra traction is needed for a

plus in drawbar over loose dirt, soft clay, sand or other types of soft footing.

5. Hydroflotation of tires offers means of obtaining extra traction and drawbar over standard Tournatractor ratings when needed.

6. Do not overlook the price advantage in favor of Tournatractor! Also the fact that for 10% less you get a much greater value. You have anti-friction power from engine to drive-wheels, dirt-tight oil enclosures and grouped lubrication through a minimum of lube points. You have the simplest system of controls, push-button operation, maximum visibility. Many other safety features — plus 17 mph go-anywhere mobility, for on-the-job or job-to-job moves.

It will pay you to investigate Tournatractor's advantages on your specific operations. We'll be glad to send a specialist on Tournatractor application to talk to you. Or perhaps first you'd like to read more about Tournatractor and where it fits into today's tractor problem. Why not ask for new 32-page illustrated bulletin. It will show you how both Tournatractor and crawlers measure up to the 4 essential dimensions of present-day earthmoving ... mobility ... speed ... traction ... power. Write or call us today.

CT-1186-G-b



LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

Where Quality is a Habit

For more facts, use Reader-Reply Card opposite page 18 and circle No. 419

The lighter side

300%
MORE EFFICIENT
THAN OLD METHODS

PROGRAM CONTROLLED FREEZE-THAW CHAMBER

FOR TESTING
CONCRETE AND
AGGREGATES



THE ONLY
"ALL-IN-ONE" UNIT FOR
A.S.T.M. DESIGNATION

WRITE FOR
LITERATURE

CONRAD
Inc.

HOLLAND, MICHIGAN

C-290-52T
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AND OTHER
TEST CONDITIONS

300% FASTER THAN OLD METHODS! As many as 8 freezing-thawing cycles per 24-hours are automatically produced in this new Conrad unit. Saves time, labor — no need for operator during repeat cycles, no transferring test materials from one cabinet to another. Fully proved, self-contained, ready to operate. Power filling and draining.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 420

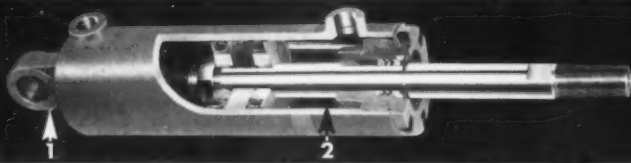
For Performance You can Depend on in Materials Handling Equipment...

BHEW Custom-Built HYDRAULIC CYLINDERS

Whatever your cylinder requirements, you're sure of dependable operational performance with efficient, close-tolerance BHEW cylinders that require minimum mounting space. Built to meet your specifications, their cost is reasonable; there is no charge for tooling; they are delivered on schedule.

BHEW CYLINDER FEATURES: • Standard and special designs available. • Double or single acting and telescopic. • 1 1/2" to 8" bore. • Strokes up to 156". • Smallest possible O. D. and retracted O. A. length. • Oil cylinders with 1,500 psi or 3,000 psi working pressure, pneumatic up to 150 psi. • Cup-type, ring-type or O-ring construction. • Choice of mounting.

For full information, send us specifications
of your requirements



1. Hinged mount for alignment. 2. Honed steel cylinder.

Do you have cylinder problems? Our engineers will be happy to work with you without charge.

Double-Acting 2-piece Piston Rod Cylinder. It is excellent for extending and retracting boom arm. Both hoses are connected on rod end.

BHEW

BENTON HARBOR
ENGINEERING WORKS, Inc.

622 Langley Avenue

St. Joseph, Michigan

For more facts, use Reader-Reply Card opposite page 18 and circle No. 421



The end of a sternwheeler is in sight. The Gen. John Newton will plow the waters of the Mississippi not too much longer for the U. S. Army Corps of Engineers.

Corps of Engineers, U. S. Army

One of the last of the old stern-wheelers on the Mississippi River is about to be retired from active service. Built at Dubuque, Iowa, in 1899, the *Gen. John Newton* has served continuously since then for the U. S. Army, Corps of Engineers. The romantic-looking workshop has plowed the waters for flood control studies, rescue work, inspection trips, and navigation projects. In recent years it has been assigned to the U. S. Army Engineer District at New Orleans, and has been used extensively on the Mississippi and other streams of the Lower Valley.

Although still in good shape, the *Gen. Newton* is considered too costly to operate in comparison with newer and more efficient type river craft, and will be advertised for public sale and sold to the highest bidder. District Engineer Col. William H. Lewis plans to use another sternwheeler, the *Mississippi*, to do the jobs for-

merly handled by the *Newton*.

Something new is being added to the ultra modern skyline of Caracas, Venezuela, with the start of construction on the "Helicoid". This "spiral in space" structure will be contoured to the side of a mountain overlooking the capital city, resulting in a height of 10 stories on one side and 25 stories on the other. Its base will cover some 25 acres. The unusual self-contained business and commercial center, the brain child of Venezuelan architect Sr. Jorge Romero Gutierrez, resembles a stack of dazzling white saucers, graduated in size. Its cost is estimated at \$25 million, and is scheduled for completion in 1960. Cars may drive to the top on ramps with easy 2 1/2 per cent grade, while for pedestrians there are elevators and escalators. The "Helicoid" will house 320 small stores, industrial show-

BROWNHOIST bridge and crane BUCKETS

we have the type and size to best handle
the job, dependent on material and equipment

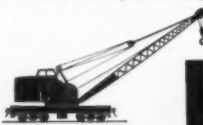
Open-type grab buckets and link-type buckets for bridge cranes, fast-plant unloaders and large gantry cranes are available in capacities from 35 to 400 cubic feet.



Because of their simplicity of design and rugged construction, Brownhoist buckets (such as the link-type left or the open type grab bucket above) withstand extremely severe abuse. Abrasion-resistant alloy steel nose plates protect against coarse materials.



Brownhoist clamshell buckets (right) in capacities from 1/2 cu. yd. to 3 cu. yds. are used with cranes for handling coal, ore, sludge, slag, rock or wet clay. They're engineered (as a result of over 80 years experience) to take full bites, year after year with trouble-free operation. Write today for catalog.



INDUSTRIAL BROWNHOIST CORPORATION
BAY CITY, MICHIGAN

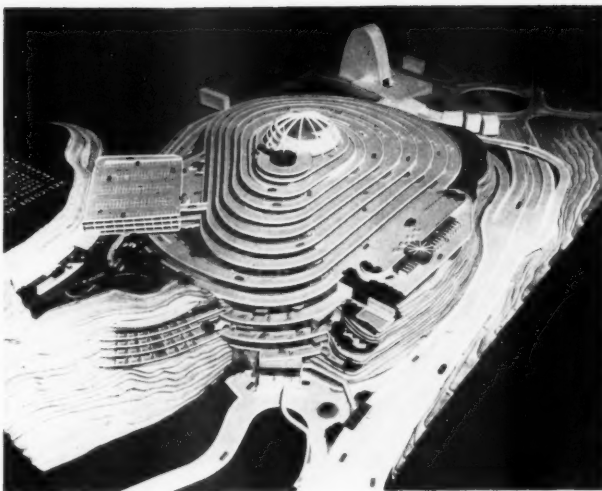
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For more facts, use Reader-Reply Card opposite page 18 and circle No. 422

CONTRACTORS AND ENGINEERS

Not a flying saucer, but a model of the business center "Helicoid" to be built on the cap of a Venezuelan mountain overlooking Caracas. The base of the 365-foot-high building will cover some 25 acres. The spiral-in-space structure will cost \$25 million and is scheduled for completion in 1960.

Hamilton Wright Photo



rooms, a hotel, swimming pool, garages, business offices, and a hall for international trade fairs in the dome.

The "flying saucer" center will be operated on a cooperative basis and is being built jointly by the firms of INACA and IVECA, both of Venezuela.

An unusual United States building is being planned for the World's Fair in Brussels, Belgium, in April 1958. Designed by Edward D. Stone, the 2-story pavilion is expected to be the largest free-span circular building ever constructed. Two rows of steel columns will support the outer ring of the roof. High tension steel cables will connect an inner metal ring to the outer rim, giving the roof the appearance of a bicycle wheel. This circular structure will house U. S. exhibits of industry, science and arts.

Controversy over design has held up construction of the interdenominational chapel for the Air Force Academy at Colorado Springs, Colorado. Some liked the futuristic design, but enough other critics of the unconventional appearance of the chapel model caused Secretary of the Air Force Donald A. Quarles to look for a design that would not offend anyone's religious sensibilities. The original concept brought forth such criticisms as "accordion on its side," "an exercise in molded slabs", "a line of telescoped tepees", etc. In the meantime the remainder of the project along the Rampart Range of the Rockies is moving ahead on schedule.

Not yet ready for construction, but a step nearer to it, is Colorado's vehicular tunnel through the Continental Divide of the Rocky Mountains.

(Concluded on next page)



3-WAY SOIL BLENDER!

Here's the one multi-purpose tool every contractor needs to speed his work and make him more money! Solving soil problems is a specialty of Rome Disk Plowing Harrows. Have you ever encountered these problems?

1 Dead, dry dirt on the fill that blades like ashes and packs like sawdust? Wet it down with your water trucks, then mix it deep with a Rome Disk Plowing Harrow to put it in good shape for specified compaction.

2 In-place materials to mix? Soil cement materials, stratas or lifts in fills can be readily turned into a compact, homogeneous fill by mixing and pulverizing with a Rome.

3 Too wet to work? Blend wet soil with dry materials, plow deep with a Rome Disk Plowing Harrow to dry out your fills and cuts.

See your Rome Dealer for complete details — he is also your Caterpillar Dealer.

ROME PLOW COMPANY, Cedartown, Georgia

Rome Disk Plowing Harrows

MODEL 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 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tains. A special session of the state legislature recently approved a bill for a tunnel that would be on a proposed new 525-mile route between Denver, Colo., and Salt Lake City, Utah. Whether or not this route will be considered a part of the Interstate Highway System, the tunnel will still be constructed, says the legislature. Under federal-aid, the state would have to pay but 10 per cent of the cost. If federal-aid is not obtained, the tunnel would be a toll project. The bore would eliminate the tortuous, hazardous drive over the top of the Divide. To avoid mountain routes now, motorists must use U.S. 30 in Wyoming to the north, or U.S. 66 in New Mexico to the south, for a flat crossing of the Divide. No exact site has been selected for the tunnel, but it would be driven well below the timberline in order to avoid the quick-striking blizzards common in the higher altitudes. An early estimate has indicated the cost of the tunnel to be around \$18 million.

• • •

A much costlier tunnel to build is the \$280 million project under the English Channel which has been periodically up for discussion since the days of Napoleon. Private parties in England, France, and America have recently revived interest in a 22-mile underwater tunnel linking Britain and France. Work on such a tunnel was actually begun near the close of the last century but was dropped before much of a start had been made because of a growing fear that it would be a threat to British security. Closer ties between western European nations now indicate that objections of a strategic and political nature to the tunnel may now be overcome without too much difficulty. Engineers have always felt confident that no insurmountable problems would prevent the construction of this longest underwater structure.

The proposed tube would be eleven times as long as the world's present record holder, the tunnel under the Mersey River at Liverpool, England, which is slightly more than 2 miles in length. In this country, the Brooklyn-Battery tunnel in New York City is the longest underwater tunnel with a length of nearly 1 1/4 miles.

• • •

Dr. D. B. Steinman, world famous bridge engineer, received another award recently to add to his long list of trophies when the Musician's Club of America presented a citation honoring him as a "great American" for his work in behalf of music, art, and science. Dr. Steinman, holder of four earned and twenty honorary degrees, has designed some 370 bridges that have been built on five continents.

• • •

One of the latest uses of the helicopter in construction is by the New York Trap Rock Corporation, a producer of crushed stone for the New York-Long Island-New Jersey area. The aggregate supplier delivers its product on deck barges, and is cur-

rently building up its fleet to a strength of 260 barges. Each unit is manned by a "scow captain" who must be paid twice a month, no matter where his craft may be at the time. Trap Rock does this by flying its paymaster around in the company's whirley-bird, which at times lands on loaded barges in moving tows as they proceed to their destinations.

American Cyanamid expands and rebuilds

An expansion and rebuilding program for facilities that manufacture industrial high explosives is being planned by the American Cyanamid Co., New York, N. Y. A substantial portion of the new program consists

of rebuilding and expanding the 535-acre New Castle, Pa., plant which was damaged late last year by an explosion in the ammonium nitrate department.

Ten new buildings are to be added to the New Castle plant, and the total floor space in all buildings will be 160,000 square feet.

Armco gives scholarships in civil engineering

Two experimental travel-and-learn scholarships for civil engineering students will be awarded by Armco Drainage & Metal Products, Inc., Middletown, Ohio.

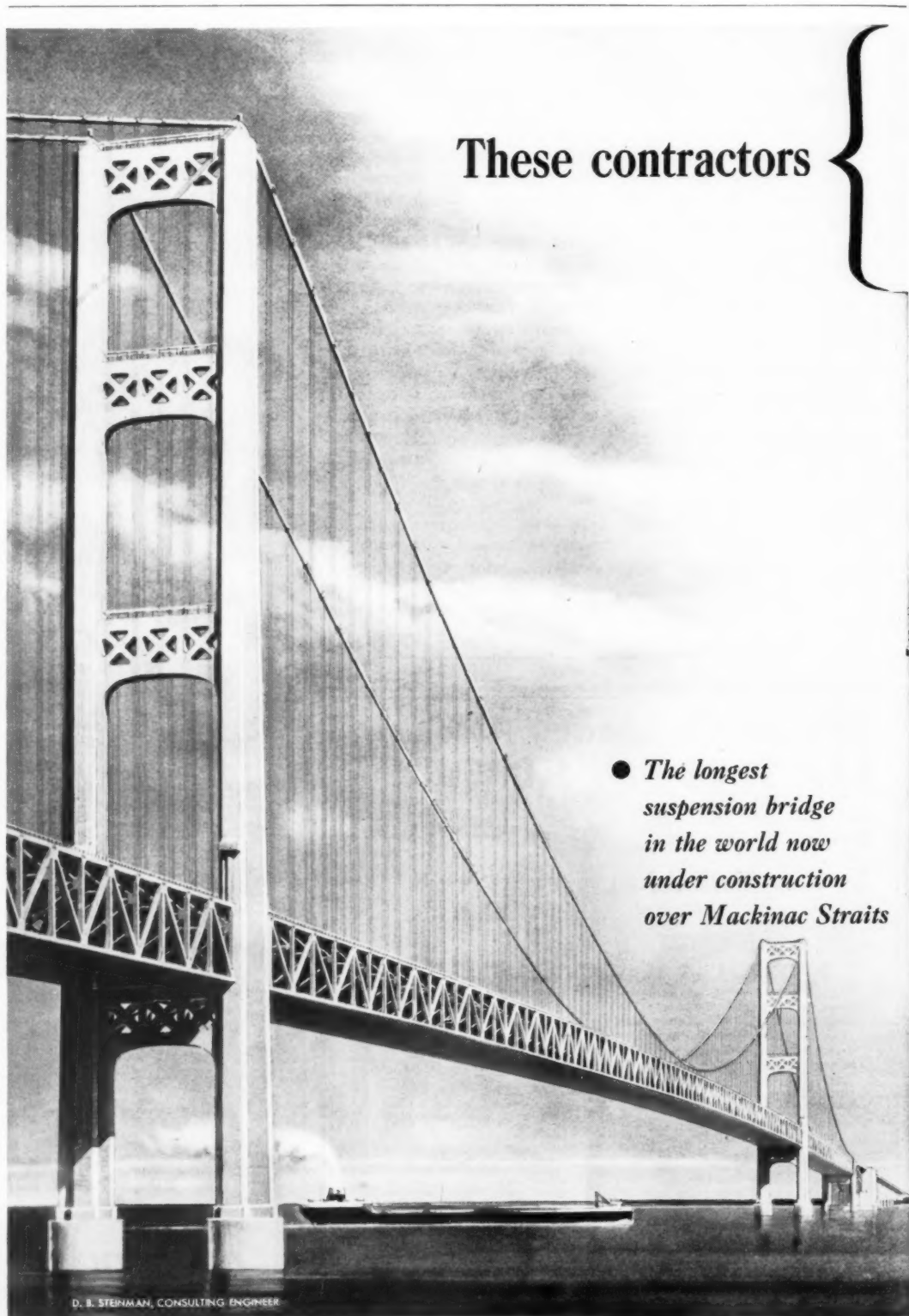
The Armco Summer Civil Engineering Scholarship winners, rather than studying in college classrooms, will

learn from on-the-job observation of highway and railroad construction projects throughout the United States. The winners will receive a cash award of \$500 and a six weeks' expense-paid tour of major construction sites.

Clark Equipment names director, managers

Clark Equipment Co., Buchanan, Mich., has appointed Charles Cook, Jr., engineering director, responsible for engineering and production liaison with Clark overseas licensees.

The new European district manager, L. W. Behrendt, has been application and service engineer with the firm's Export Division for the past nine years. Edward Heath, the new Central America district manager,



These contractors

● The longest suspension bridge in the world now under construction over Mackinac Straits

D. B. STEINMAN, CONSULTING ENGINEER

was export manager of Vickers, Inc., for ten years. The South American district manager, George Sylvester, will have headquarters in Rio de Janeiro, and will cover Brazil, Argentina, Uruguay, Paraguay, and Chile.

Brucker and Tallamy slated as ASCE speakers

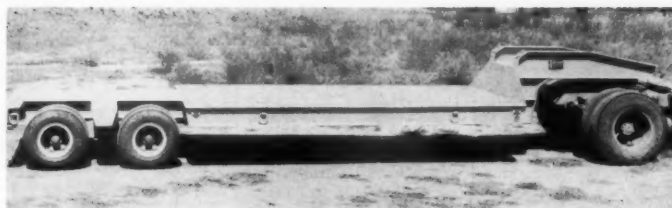
Wilber M. Brucker, Secretary of the Army, and Betram D. Tallamy, Federal Highway Administrator, are the chief speakers for the national spring convention of the American Society of Civil Engineers, June 3 through 7 in the Statler Hotel in Buffalo. Secretary Brucker will be the speaker of the evening June 5 at a convention dinner. Tallamy will speak at a June 4 Highway Division luncheon.

Heavy-duty trailers carry 10 to 35 tons

Single and tandem-axle low-bed trailers in capacities of from 10 to 35 tons are available from the Ferree Motor & Equipment Co. Special units in capacities of up to 100 tons are available on special order. The trailer frames are made of high-strength steel designed and welded together to give uniform load distribution over the entire trailer deck, the manufacturer states.

The fifth wheel plate is reinforced with four channel cross members to insure even fifth wheel loading. For extra strength, the gooseneck is fabricated of I-beams. The deck consists of 2½-inch-thick oak panels laid lengthwise.

Ferree low-bed trailers feature a welded one-piece steel frame for uniform load distribution over the entire trailer deck.



The tandem-axle trailers feature 10-inch oscillation of the tandem gear. On all models, running lights are recessed to prevent damage. The trailers have only 12 points of lubrication and greasing is required at

5,000-mile intervals.

For further information write to the Ferree Motor & Equipment Co., 2451 Randleman Road, Greensboro, N. C., or use the Request Card at page 18. Circle No. 102.

Merritt-Chapman & Scott Corporation and American Bridge Division of U. S. Steel Corporation

use Shell Lubricants in the construction equipment on Mackinac Bridge project

Today's engineering knowledge and modern construction equipment are making the mighty Mackinac Bridge a reality. This equipment requires oils and greases which will remain stable and give adequate lubrication at extreme temperature ranges. To keep their heavy-duty machines operating at maximum efficiency with a minimum of down time, both companies, Merritt-Chapman & Scott Corporation and American Bridge, chose Shell Lubricants and Fuels.

The Mackinac Bridge project is just one of the many construction operations where equipment was lubricated and protected by Shell products. Wherever heavy-duty equipment operates, Shell Lubricants and Fuels are being used to keep machinery in top operating condition and hold maintenance costs down. Perhaps it will pay you to investigate the savings that can be realized through the use of Shell Industrial Lubricants and Fuels.

SHELL OIL COMPANY SUPPLIES:

Gasoline	Solvents
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Industrial Lubricants	Outboard Motor Oil
and many other fuels and lubricants	



American Bridge Division of U. S. Steel Corporation has strung a total of 12,500 tons of cable as part of the 66,500-ton superstructure.



One of the 34 piers of the bridge substructure built by Merritt-Chapman & Scott Corporation

Straight-edge detects high and low places

An easy-rolling straight edge for the detection of high or low places on forms and pavement slabs is announced by the Viking Mfg. Co. The Hi-Lo detector dye-marks slab areas not within specifications.

The rig consists of a 10-foot aluminum beam which rolls on ball-



Workmen adjust a concrete form joint found to be out of line by the Viking Hi-Lo detecting rig. The machine also is used to detect high and low places on pavement slabs.

bearing rubber-tired aluminum wheels. A center wheel measures up and down variations of the surface. The variations are magnified 20 times on a large scale graduated in 1/8-inch readings.

The Hi-Lo is guided by a bar handle. It has a steerable front wheel. The dye marker is controlled by the left handle grip, permitting an inspector to cover and mark a slab at an easy walking pace.

For further information write to the Viking Mfg. Co., 1801 Gage Blvd., Topeka, Kans., or use the Request Card at page 18. Circle No. 52.

Standard Steel news

The new advertising manager of Standard Steel Corp., Los Angeles, Calif., is Edward J. Meier.

Meier joined Standard Steel last September as director of public relations.

SHELL OIL COMPANY

50 West 50th Street, New York 20, N. Y. • 100 Bush Street, San Francisco 6, Calif.



For more facts, use Reader-Reply Card opposite page 18 and circle No. 425



A shop-fabricated 1,000-gallon tank truck with Wisconsin pump and 24-foot spray wets down the burlap.



Strips of watered down burlap were replaced with 4 to 5-inch-thick layers of straw, which were also watered down.



A workman sprays the base ahead of the Koehring 34-E Twinbatch paver. On the base are oiled bars placed on 12-inch centers for transverse joints.

State compares curing methods on realignment project

by WILLIAM T. DARDEN, assistant editor

Construction of the southbound roadway of a nearly six-mile-long stretch of new highway alignment recently gave the State of Indiana opportunity to test and compare two types of concrete-curing procedure: the standard method employing wet burlap and straw and a newer procedure involving the use of curing papers.

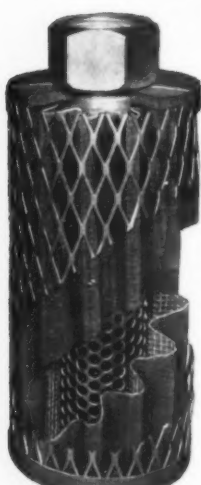
Berns Construction Co., Indianapolis, had the \$822,000 contract covering grading, base preparation, and paving of this half of a future divided highway. The work involved construction of a new alignment for State Route 37 beginning at Castleton in the center of the state and running

northeasterly for 5.9 miles.

Route 37 is at present the main highway linking Indianapolis with Huntington and Fort Wayne.

The contractor started work June 19 of last year, and managed to keep ahead of schedule during much of the project. The job was completed and accepted by the state highway department on December 20, although the new roadway was opened to local traffic on November 1.

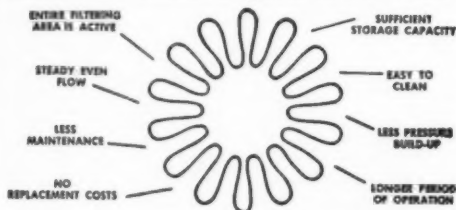
For this initial use of paper as a curing agent, the Indiana State Highway Department specified that alternate miles be cured by the two methods. Thus one half of the new pavement was cured by the burlap-and-



SUMP TYPE (cutaway)

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For All Hydraulic and Other Low Pressure Liquid Systems

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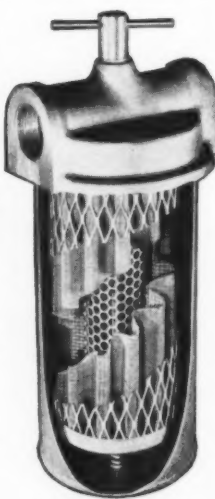
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LINE TYPE (cutaway)

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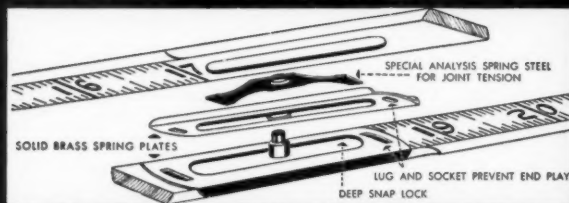
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- ☐ Catalog #200—For Fire-resistant Hydraulic Fluids (Aqueous Base)
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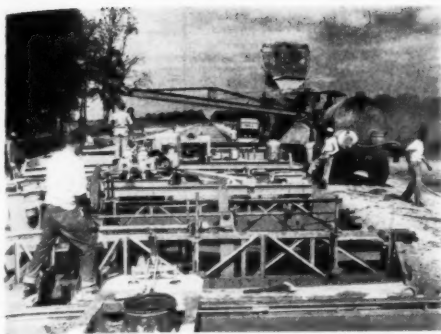
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For more facts, use Reader-Reply Card opposite page 18 and circle No. 426

CONTRACTORS AND ENGINEERS



The 24-foot-wide roadway was paved in one operation by a Koehring 34-E Twinbatch paver (background), a Blaw-Knox spreader, a Blaw-Knox finisher, and a Flex-Plane joint cutting machine.

Alternate miles of new concrete pavement treated with wet straw, curing papers

straw procedure, and one half with Sisalkraft and Simplex paper.

Quantities

The project involved placing 175,000 cubic yards of special borrow from outside the right-of-way. Other quantities included 30,000 cubic yards of common excavation; 28,000 cubic yards of base material (pit-run gravel); 92,650 square yards of 9-inch-thick reinforced-concrete pavement; 3,500 linear feet of 6, 8, and 10-inch drain tile; 3,651 linear feet of 12 to 48-inch concrete and corrugated metal pipe for culverts; and 20,500 square yards of shoulder sodding.

Once topsoil and organic material had been removed from the roadway site, the contractor negotiated for borrow areas located a little less than a half mile from the job. Four Caterpillar DW21 scrapers push-loaded by an Allis-Chalmers HD-19 and an HD-21 brought in the fill material. Loading cycles averaged 60 seconds.

On the roadway, Caterpillar and Allis-Chalmers graders bladed out the borrow material, and a Killifer disk pulled by an HD-14 broke up the lumps of clay. A Caterpillar No. 12 grader and a LeTourneau-Westinghouse LP scraper pulled by a Cat-D7 were used in the finegrading operation.

A gravel pit about 2½ miles from one end of the project provided the base material. A Lima crane with Page 1¼-yard dragline bucket worked to a depth of more than 30 feet, removing big rocks from the gravel, mixing the usable material in the pit, and loading eight Ford and International trucks that hauled the gravel to the roadbed.

The trucks dumped to a Jersey spreader pushed by a Caterpillar D7 and equipped with wings to give it a 12-foot spreading width. A Huber-Warco 10-ton three-wheel roller compacted the base.

An initial lift of loose gravel, ranging from 4 inches in thickness on the side toward the future median to 6 inches on the outside shoulder, was rolled, then a second lift was put down and the whole compacted to a thickness ranging from 5 inches at the inside edge to 7 inches at the outside edge.

Paving

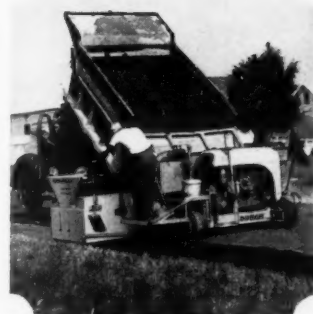
An all Blaw-Knox concrete plant
(Continued on next page)

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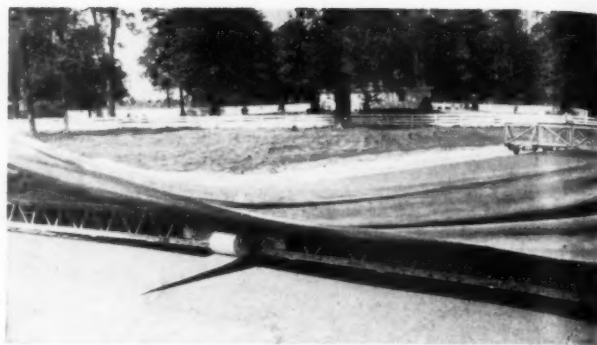
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In the left hand photo, a workman riding a Flexible Road Joint bridge works a center stripe of ferrous oxide into the fresh surface. At right, a 9-inch-wide strip of butcher's paper, unwound from a rolling bridge, will keep water used in the curing process off the center marker. On this stretch, burlap is placed over the fresh concrete.



(Continued from preceding page)

set up at one end of the project turned out batches for the paving operation. Four units were set up in a line: a two-compartment bin with

twin weigh batchers for two sizes of coarse aggregate; a three-compartment bin for sand; a single-batch cement plant with 250-barrel capacity; and a double-batch cement plant with 300 barrel capacity.

Koehring 304 cranes with Owen 1-yard rehandling buckets were used to charge the aggregate and sand bins. The cement plants and a 400-barrel storage silo were filled from Fruehauf cement trailers pulled by Ford tractors.

Aggregates for the concrete were supplied by Standard Materials Corp., Indianapolis. Lehigh Portland Cement Co. at Mitchell and the Lone Star Cement Corp. at Greencastle supplied the cement.

Eleven International, Ford, and Chevrolet batch trucks, each carrying two batches, delivered the concrete to the paver. Nine of the batch trucks were owned by the Berns Co.

A typical batch consisted of:

Ingredient	Quantity
Gravel (¾-inch)	1,154 pounds
Gravel (1½-inch)	1,730 pounds
Sand	1,554 pounds
Cement	781 pounds
Dorex AEA	5 ounces

Just ahead of the paving train, a Caterpillar No. 12 grader adjusted the base, while trimming was done by a trail planer pulled by an Allis-Chalmers tractor. Final rolling was done with a small, self-propelled three-wheel roller. The finished grade was checked with a hand-propelled scratch template.

Paving train

The entire 24-foot width of roadway was paved in one operation. The paving train was led by a Koehring 34-E Twinbatch paver working outside the forms. These were Heltzel 9-inch steel forms, and approximately 4,000 road-feet of them were in use. Following in order behind the paver were a Blaw-Knox spreader, a Blaw-Knox finisher, a Flex-Plane joint machine that cut transverse and longitudinal joints, a Koehring longitudinal finisher, a hand-operated belt finisher, a rolling bridge from which dummy joint markers were removed, and a Flexible Road Joint center stripe bridge.

Paving averaged more than 1,000 feet per day, and on good days the footage of pavement placed was over 1,300 feet.

Reinforcing mesh was placed between an initial 7-inch lift of concrete and the top 2-inch lift. Oiled bars, 1 inch in diameter and 2 feet long,

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A Jersey spreader, pushed by a Caterpillar D7 tractor, places the base material. The spreader, equipped with wings, covers a 12-foot width.

were placed on 12-inch centers every 40 feet for transverse joints; ½-inch by 36-inch center-joint tie bars were placed every 30 inches.

Some distance behind the paving-finishing train came the center striping operation. A workman riding a bridge worked a stripe of ferrous oxide into the fresh surface. Not far behind this bridge came another with a roll of butcher's paper mounted on the back. This 9-inch-wide strip unrolled over the freshly placed center stripe just ahead of the curing crew. The paper kept water used in the curing operation off the center marker.

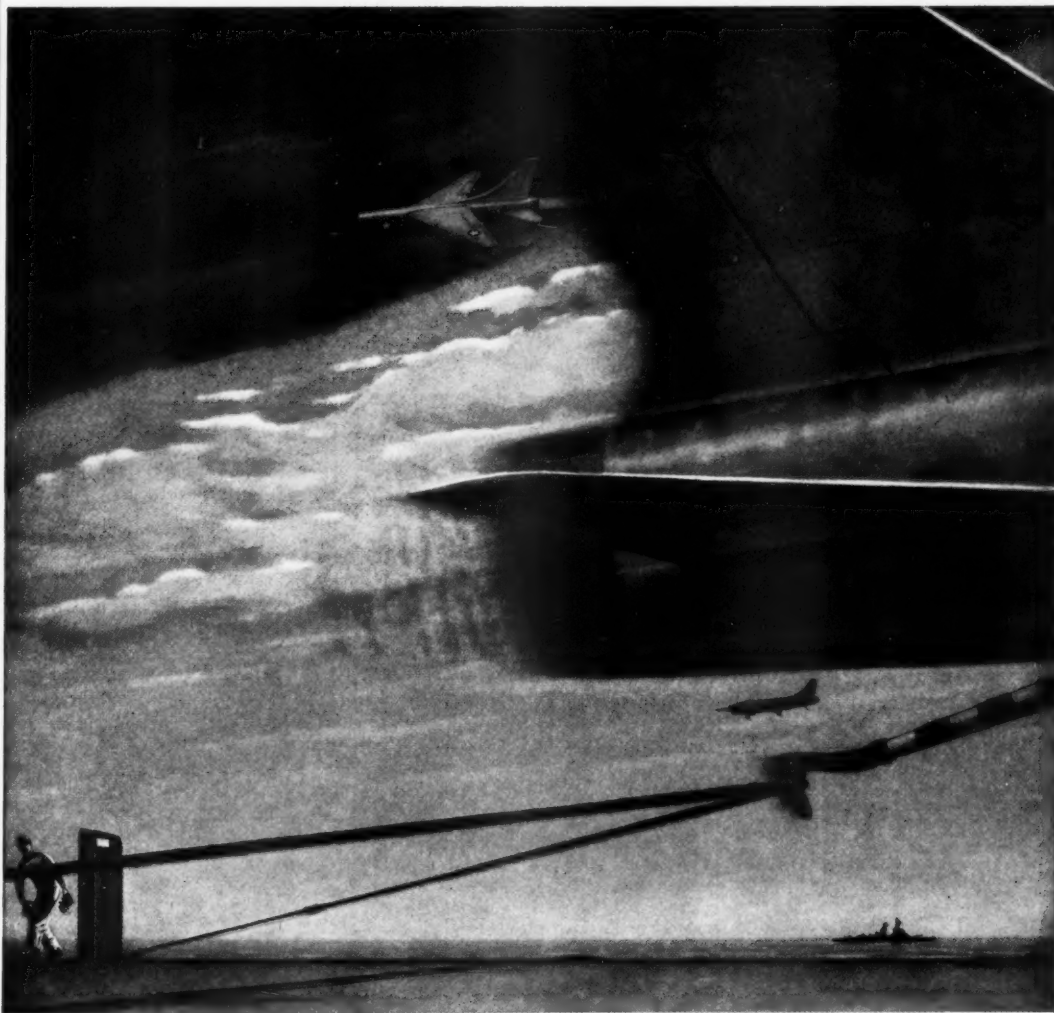
Curing methods

Alternate miles were cured with the two methods. In curing with burlap and straw, the contractor first put down strips of burlap the full width of the roadway. A spray truck then wet down the burlap. Five or six hours after being placed, the burlap was taken up and straw put down 4 to 5 inches thick. The spray rig kept this straw wet. About 96 hours after paving, the straw was taken up and piled on the shoulder for burning. With this method, the pavement could be opened for use in from 7 to 9 days.

The spray rig used was a shop-fabricated 1,000-gallon tank-truck

(Continued on next page)

A Caterpillar DW21 scraper, push-loaded by an Allis-Chalmers HD-21, works in the borrow pit which is about half a mile away from the roadway site. Another Cat DW21 gets into position for the loading cycle, which takes 60 seconds.



In carrier landings, planes coming in at more than 100 knots are stopped in a split second. This amazing performance is made possible by having each plane hook onto one of several wire ropes stretched across the flight deck. Both plane and rope receive an almost unbelievable shock at the moment of contact. Needless to say, only top-quality wire ropes can be used for this application because...

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While your use of wire rope differs from this carrier application, *safety should be just as important to you.* For, although a "bargain" rope may save you money, it can cost you your peace of mind. So don't bargain with safety. Buy a rope that's a *quality* rope—buy Wickwire Rope.

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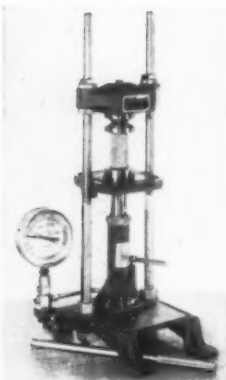


As an Allis-Chalmers No. 45 grader levels the borrow material, a Huber-Warco 3-wheel roller compacts the lift. The Barber-Greene ditcher, background, cuts a 3 to 5-foot-deep trench for a drainage system for ground water under the slab.

At the Blaw-Knox batch plant is the 250-barrel single-batch cement plant (foreground), the 3-compartment sand bin charged by a Koehring 304 crane with Owen 1-yard bucket (center), and the 2-compartment aggregate bin with twin weigh batcher for two sizes of aggregates.



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Samples are quickly pressed for soil tests or further analysis and testing with Carver Test Cylinders, available in two sizes—1½" and 2¼" diameter. Other Standard Accessories available include Carver Swivel Bearing Plates for comparative crushing tests of 2" x 2" cubes; 2" x 4" cylinders and like requirements.

Several state road departments have used this equipment successfully for years. A Florida State Road Dept. engineer reports "Six Carver Presses are used daily for the numerous soil tests—." They have recently purchased four additional presses. The Texas State Highway Dept. has purchased over 30 Carver Laboratory Presses for such use—perhaps this thoroughly standardized Press will answer your pressing problems.

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202

(Continued from preceding page)
mounting a Wisconsin pump and a 24-foot spray bar that extended across the new slab.

In the other curing procedure, Sisalkraft or Simplex curing paper was put down over the fresh concrete, and taken up after 96 hours had elapsed. Despite the paper cost, the second procedure was quicker and required less labor and machinery.

A hot-applied joint-sealing compound containing Standard Oil's O.A.F. No. 1 asphalt was used to fill the transverse joints in the pavement.

Shoulders

Eleven-foot dirt shoulders on either side of the roadway were built to a 1-inch-per-foot pitch on the low side. The roadway base material was carried out to the edge of the shoulder so that water would drain from underneath the pavement. These shoulders were seeded to the edge of the slab.

Using a Cleveland Model 110 wheel trencher and a Barber-Greene ditcher, the contractor dug a trench

(Continued on next page, col. 3)



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Steel photographic exhibit previewed by sponsors before nationwide tour

A photographic art exhibit of structural steel in architecture, scheduled for showings at museums throughout the country, was previewed last month by its sponsors, the American Institute of Steel Construction and the American Federation of Arts. The preview was held at the Pinnacle Club in the Socony-Mobil Building, New York City.

The exhibit, including studies of 36 structures in the U. S., emphasizes the use of exposed structural steel in homes, churches, commercial, recreational, and educational buildings. Designs of the leading contemporary American architects are represented in the group.

The exhibit shows such buildings as the Coliseum in Charlotte, N. C., with the largest steel-framed dome in the world; several New York skyscrapers, including the Lever House and the Socony Mobil Building; the Philip Johnson House in New Canaan, Conn., which is completely enclosed by glass hung in a rigid frame; and the Phyllis Wheatley Elementary

School in New Orleans, La., where the classroom building is suspended above ground to provide a covered area for play.

Commenting at the preview of the show, N. P. Hayes, president of the AISC said that while steel has been used in buildings for a hundred years, architects have only begun to assign steel the dual role of a structural and architectural element. The potential economies and aesthetic possibilities of structural steel as a construction material have been scarcely touched thus far, he added.

Hayes pointed out that currently, "scientists are finding ways to produce lightweight steels that will have greater tensile strength, resistance to corrosion, and other desirable properties." Hayes also gave some idea of what the future may hold, stating that "A leading steel company is now doing research aimed at producing structural steel that will be transparent enough to transmit light into buildings." Mr. Hayes is president, Carolina Steel & Iron Co.

Percentage of engineering students highest since '48

A total of nearly 243,000 students are registered in accredited engineering colleges, according to figures compiled by the U. S. Office of Education and the American Society for Engineering Education. This total is almost equal to the all-time high of 1947, and is the highest figure to date since 1948.

Undergraduate senior engineering students are 20 per cent over 1955, when graduates numbered nearly 24,000. This year, 22,240 students acquired master's degrees—20.8 per cent more than last year. About 3,400 students are working toward

doctor's degrees in engineering—a 7.6 per cent increase.

The most popular field among engineering graduates is mechanical engineering, closely followed by electrical, civil, chemical, and industrial engineering. However, 20 per cent of this year's undergraduates will have electrical engineering degrees, and 17 per cent degrees in the other engineering fields.

These figures cover all institutions in which one or more engineering curricula are accredited by the Engineers Council for Professional Development.

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(Continued from preceding page)

ranging from 3 to 5 feet deep, parallel to the roadway. This trench was about 2 feet outside the pavement, and had a round bottom 3 feet in radius. Six-inch-diameter sewer pipe, was placed in the trench in 2 1/2 and 3-foot sections to provide a drainage system for ground water under the slab.

Sodding was put down over the break of the shoulder for 32 inches as the final step in the shoulder development.

James H. Drew Co., Indianapolis, was subcontractor on the fencing off of the right-of-way. Link-type fencing made by the Anchor Post Fence Co. was used.

Warren Pigg was project engineer

for the highway department, with F. A. Henson his assistant. W. J. Berns was general superintendent, with John L. and Herman Berns as grade superintendents and Tom Berns as paving superintendent. M. E. Haun was the concrete plant foreman.

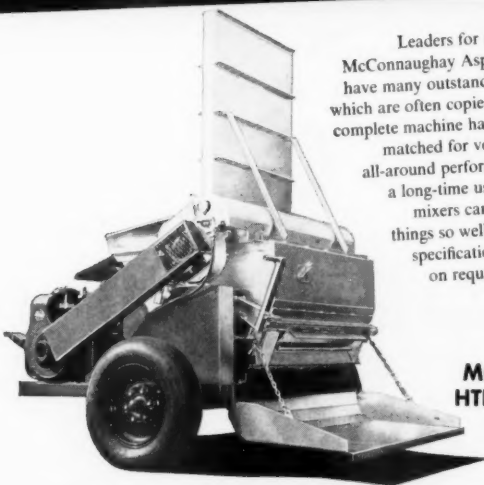
THE END

RB&W appointment

A new addition to the sales organization of Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y., is Robert McNeal Smith. He is serving the firm in the position of assistant vice president.

He was formerly with the Pittsburgh Screw & Bolt Corp., most recently as vice president in charge of eastern sales.

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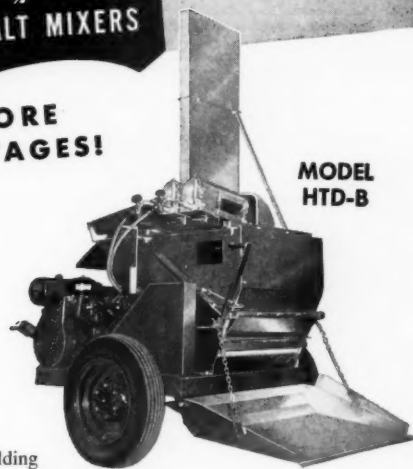


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WINTER makes its last stand on the slopes south of Wenatchee, Wash., where a Caterpillar DW15 tractor and No. 15 scraper, push-loaded by a D8, start the new season on a road reconstruction job. C. E. Oneal Co., Inc., Ellensburg, Wash., is the contractor for the 2.84-mile section of county road being modernized.

Brass Ants get prizes offered at Road Show

Six members of the "Royal Order of Brass Ants" a road construction fraternity organized at the Road Show by Seaman-Andwall Corp., Milwaukee, Wis., have won Evinrude 3-hp Lightwin outboard motors offered as prizes at the show.

The six include O. A. Price, Duval Engineering & Construction Co., Jacksonville, Fla.; Frank W. Thomas, Asphalt Paving Co., Billings, Mont.; Robert Carrier, Genesee County Highway Department, Corfu, New York; William J. Ryan, Ryan Bros Co., Janesville, Wis.; W. T. Spencer, State Highway Department soils engineer, Indianapolis, Ind.; and R. A. Arnold, Texas Bitulithic Co., Dallas, Texas.

U. S. Steel Corp. advances T. M. Hunter

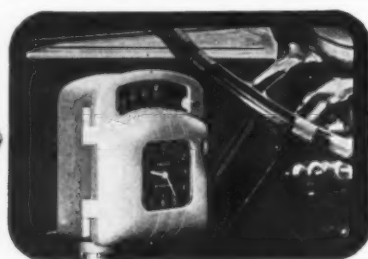
T. M. Hunter has been made assistant to the vice president-operations of U. S. Steel Corp.

Hunter will be concerned with the short and long-range planning for all mining and manufacturing facilities of the corporation on a nationwide basis.

Holder of a B.S. in mechanical engineering from Carnegie Institute of Technology, Hunter has been with U. S. Steel since 1936. Promotions brought him from Shenango Works to the Irving Works, where he became superintendent of flat products in 1941. After being made tin mill division superintendent at the Gary sheet and tin mill, Gary, Ind., he became assistant general superintendent of the Irvin Works. In 1955, he was made general superintendent of the plant.

Hendrickson names Butler

Ralph T. Butler has been appointed sales and service representative for the Hendrickson Mfg. Co., Lyons, Ill. From headquarters in Springfield, Mo., Butler will cover the firm's Southwest territory.



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Regardless of the type of vehicle you operate, a Tachograph will economically measure the complete performance of both equipment and drivers.

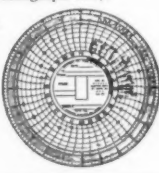
The Tachograph is an accurate recording speedometer that mounts easily on the dashboard. From the wax-coated chart that is inserted inside the tamper-proof aluminum case, you get a complete and permanent record of the entire operation. When started—Stopped—Idle time—Distance between

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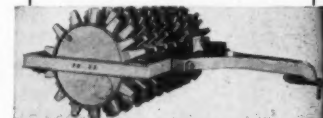
Write for Bulletin 655 TODAY. NORTH MIAMI, FLA.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 439

Grace ASPHALT AND COMPACTION EQUIPMENT



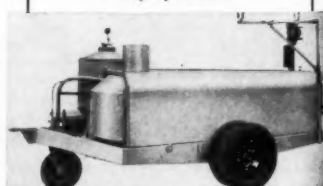
Roadsweepers, traction, engine-driven or tractor-mounted



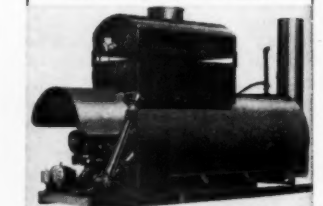
Sheepfoot rollers



Chip spreaders



Circulating asphalt heaters



Automatic oil heaters for hot plants



Pneumatic rollers, self-propelled or trailed

W. E. GRACE MFG. CO.

6003 S. Lamar • Dallas, Texas

For more facts, circle No. 440

CONTRACTORS AND ENGINEERS



The Miller Hot-Box heats and cleans asphalt shovels in less than two minutes. It can be mounted on most asphalt pavers.

New propane-fired unit cleans asphalt shovels

A propane-fired shovel cleaner that will heat and clean asphalt shovels in less than two minutes is available

from the Miller Spreader Co. The Hot-Box mounts on either the traffic or curb side of self-propelled and towed asphalt pavers.

The Hot-Box has an all-steel insulated shell which houses two shovel racks and a heat radiator. A hinged door at the bottom drops for easy cleaning. The unit is offered with an empty 20-pound propane gas cylinder, hose fittings, a burner, and two mounting brackets.

According to the manufacturer, the Hot-Box eliminates all hand scraping and removes the possibility of wooden shovel handles being burned.

For further information write to the Miller Spreader Co., 4020 Simon Road, Youngstown, Ohio, or use the Request Card at page 18. Circle No. 127.

Chain Belt names regional and district managers

Three regional managers for the Eastern, Midwest - Southern, and Northwestern territories have been appointed by the Chain Belt Co., Milwaukee, Wis. The Eastern regional manager, J. B. Roberts, will make his headquarters in the firm's new district office in East Orange, N. J., and will be responsible for the Baltimore, East Orange, New York, Philadelphia, Springfield, and Boston district offices.

William Sivy, Midwest and Southern regional manager, will be responsible for Atlanta, Birmingham, Buffalo, Charlotte, Cincinnati, Denver, Jacksonville, Kansas City, Minneapolis, St. Louis, and the Toronto, Canada, offices.

Northwestern regional manager, H. F. Bergis, will be in charge of the Portland, San Francisco, and Seattle offices from his headquarters in Portland.

Six district sales managers have been appointed—J. S. Moore, New York; Harold M. Weil, Philadelphia; D. P. Murrill, Atlanta; W. E. Church, Portland; F. R. Traylor, Charlotte; and C. D. Bergen, East Orange.

Timken office moves

The Buffalo, N. Y., Industrial and Steel sales office of the Timken Roller Bearing Co., Canton, Ohio, moves this month to a new plant building at 2960 Main St., Buffalo. The move is being made from 374 Delaware Ave. because of the need for additional office space.

WHEN THAT METAL CUTTING JOB IS REALLY

TOUGH!

Make it EASY!
(and cut costs)
with this . . .
**RUGGED
POWERFUL**



**HKP
PORTER
HEAVY DUTY
CUTTER**

**IT CUTS THESE
TOUGH METALS
EASILY!**

— HARD METALS — CONCRETE REINFORCING RODS — HARD WIRE ROPE — CHROME BALL WIRE — COLD DRAWN ALLOY STEEL — TEMPERED STEEL WIRE

Why fool around with other tools, when the job calls for a PORTER HEAVY DUTY METAL CUTTER? Let those heat-treated, drop-forged, abuse-resistant jaws make the work easy, and less costly. Handles on 590HD size are all steel. This rugged, multi-job tool is designed for cutting the hardest bolts, rods and hard cable. Nothing better for construction companies and heavy industries.

for CUTTING STEEL CABLE and WIRE ROPE use the STEEL CABLE CUTTER



The jaws in this shear-action, clean cutting STEEL CABLE CUTTER are notched to lock the cable in during cutting action to minimize crushing. For cutting soft or hard steel cable or wire rope up to 3/4".

for CUTTING CHAIN use the HARD CHAIN CUTTER — 590HC



The right way to "cut" hard chain, alloy and case-hardened tempered spring wire and case-hardened bolts and screws is to crush (not cut) them with the center cut, round edge action of this PORTER HARD CHAIN CUTTER. Cuts one side of link at a time to prevent damage to tool. Capacities up to 1/2".

WRITE for catalog showing these and other PORTER METAL CUTTING TOOLS.

HKP

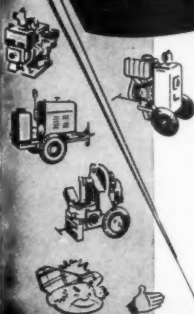
H. K. PORTER, Inc.
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MAY, 1957

depend on dependable McGOWAN PUMPS

LIGHT and HEAVY DUTY



... backed by more than a century of engineering and in-the-field experience

McGowan Pumps designed and shop tested to meet A.G.C. standards

DISTRIBUTORS NOTE!

A Number of Attractive Territories Still Available

If your territory is open, here is an opportunity to increase your earnings with this respected, well-known brand. Easy to sell . . . highly profitable . . . COMPLETE LINE of Self-Priming Centrifugal and Diaphragm Pumps.

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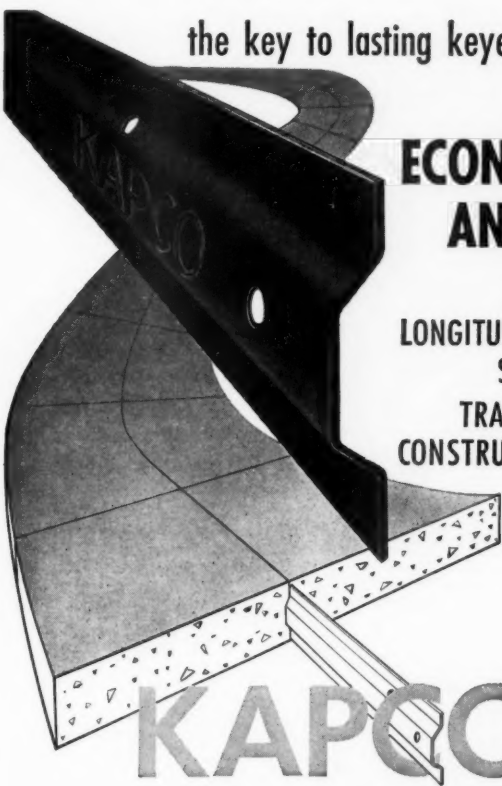
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the key to lasting keyed joints . . .

the
**ECONOMICAL
ANSWER**

for
**LONGITUDINAL CENTER
STRIPS
TRANSVERSE
CONSTRUCTION JOINTS**



KAPCO
TONGUE and GROOVE JOINT

DURABLE IN SERVICE:

Preformed mastic composition absorbs expansion of slab — without extrusion. An effective, efficient bearing surface between slabs to prevent spalling at joint surfaces. Won't rust or rot.

RIGID:

More than sufficient strength to resist deforming forces of concrete placement . . . yet lightweight and easy to install.

WEATHERPROOF:

Won't rust or rot; absorbs no more than 8% water by test.

ECONOMICAL:

Less expensive than steel. Proved over the years on the basis of its high efficiency as load transferring medium.



A Division of AMERICAN-MARIETTA COMPANY
3788 CHOUTEAU AVENUE, ST. LOUIS 10, MISSOURI

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205

There is a "best way" to sharpen, reharden moil points

**Observe maximum heating
temperatures when pointing
and tempering are done**

When moil points are delivered to a user, they are hardened all over. If they are kept that way, and the point kept sharp, they will pay dividends in performance. The trick is in knowing how to maintain the points in about the same condition as they were when delivered from the factory. The two important things to remember when doing maintenance work on the tool concern tempera-

ture. point should be quenched in water.

The proper tempering heat is 450 degrees F. To observe the temper color, polish the point with an abrasive or rub it on a sanded board. This should be done immediately on removing the point from the brine quench. When using color to draw the temper, watch the color carefully, for the entire point must be quenched in water as soon as the color is observed.

The average blacksmith is inclined to give the steel too much heat, both for forging and hardening. It is always advisable to heat the steel slowly and harden it with as low a heat as possible to obtain the required hardness. The heat must also be confined as closely as possible to the point if the temper is not to be drawn out of the remainder of the tool.

If the tool appears to be soft on the cutting edge, this is an indication of either hardening at too low a temperature or too high a drawing temperature. Brittleness or chipping occurs when hardening is done at too high a temperature or when the temper has not been drawn sufficiently.

Keep this information in the back of your mind when you get ready to sharpen and reharden moil points, and your work will result in a longer, more productive life for the tool.

To obtain copies of this procedure, write to Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill., or use the Request Card at page 18. Circle No. 177.

Reshaping

During reshaping operations, heat the point to a bright red and to a temperature that does not exceed 1,700 degrees F. The heat should be applied to an area not exceeding 1 inch from the point and be of an amount sufficient to do only the necessary pointing.

After forging, allow the moil point to cool in air. If quenching oil is available, it is well to quench the point immediately after the repointing operation, then proceed to harden the point.

Hardening

In hardening the tool, heat the point a very short distance back from the cutting edge to a cherry red color, or to a temperature of about 1,450 degrees. Quench in brine about one inch back, leaving a certain amount of heat in the steel just above the quenching line. This heat is usually sufficient to draw the temper in the point back to a blue color. As soon as this takes place, the entire

THE SURVEYOR'S NOTEBOOK

Reporting on Unusual Surveying Problems and Their Solutions
Notekeeper: W. & L. E. Gurley, Established 1845

How to Make a Plumb Board for Easier Layouts

"A couple of years ago, windy days, green rodmen and terrain hazards were slowing up construction layout," recalls George Guesmer of Minneapolis. "Reference points were hidden from the transitman by brush, dirt, concrete and construction materials. With the plumb bob swinging in the wind, accurate work became impossible.

"I solved all the problems by making a plumb board. To make one yourself, obtain a builders' three-way plumb and level (used in making an ordinary mason's level) and a piece of plywood 1/2-inch thick, 48 inches long and the width of the plumb and level (generally three inches). Drill three one-inch holes in the plywood to permit observation of the level bubbles from the rear of the plumb board. Paint the plywood with a couple of coats of flat white.

"After the paint has dried, use black waterproof drawing ink and a ruling pen to draw a line lengthwise down the middle of both sides of the plywood. Graduate the ends of



Guesmer plumb back of obstruction (left); offsetting.

the board in inches—or tenths, if you prefer. The alternating black rectangles make it easy to see the vertical line at a distance. To preserve the inked lines and to keep the board clean, spray the entire board with a clear plastic or brush on a clear spar varnish.

"I found my homemade 48-inch plumb board easy to handle and adequate for most work. It's especially handy for offsetting a reference line or measuring a short distance. I have run many an accurate, trouble-free mile of line using my plumb board, Gurley transits and Gurley levels."

"The Surveyor's Notebook" collection is packed with valuable tips like these. More than 40,000 engineers and surveyors are finding them helpful. Write for your free copy... At the same time, why not send us your own story?



Variable Power, now standard on all Gurley transits and levels, permits wide range of magnification with one eyepiece. Change your magnification to suit weather and light conditions. Built-in haze filter. Write for "Facts on VP."

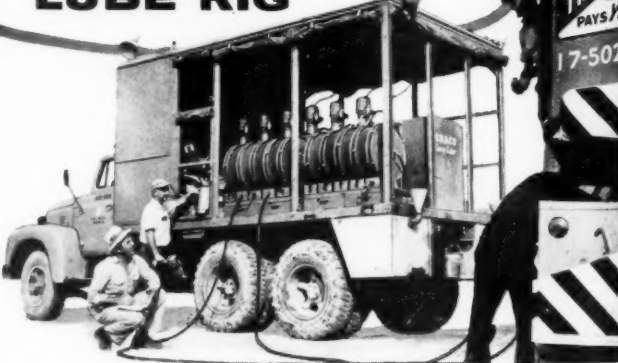
W. & L. E. GURLEY

Fulton & Station Streets, Troy, N. Y.

GURLEY Surveying and Scientific Instruments

For more facts, use Reader-Reply Card opposite page 18 and circle No. 444

Here's how to plan your LUBE RIG



Call on Graco's experience in lube rig design... select Graco's quality lube components that fit any need. Our engineers have helped design hundreds of "job planned" lube trucks. They can help you if you need assistance.

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- 1 Decide your needs. What's required for your equipment and service schedules?
- 2 Using Graco catalog, select reels. Choose size, power ratio of pumps.
- 3 Make rough sketch. Draw simple plan of your truck platform, giving dimensions and capacity. We'll plan from here.

BEFORE YOU BEGIN, send for new helpful 24 page catalog. Shows special units. Illustrates components. Ask for Graco Catalog 701.



For more facts, use Reader-Reply Card opposite page 18 and circle No. 445

CONTRACTORS AND ENGINEERS



Optionally available with the Pitman Hydra-Lift Model 60 HB is a specially-designed carrier and a new high-mounted boom.

Special carrier optional with hydraulic lifting rig

Maximum ruggedness and mobility are said to be combined in a specially designed carrier now available as optional equipment with the Pitman Hydra-Lift Model 60HB. Also available is a new high-mounted boom. The new boom makes it possible to haul higher-capacity loads no matter what kind of a carrier or truck the Hydra-Lift is mounted on, the com-

pany reports.

The Hydra-Lift requires only 44 inches of space behind the truck or carrier cab and has a lifting capacity of 6,500 pounds.

For further information write to the Pitman Mfg. Co., 300 W. 79th Terrace, Kansas City, Mo., or use the Request Card that is bound in at page 18. Circle No. 77.



THE SMITH 75-P POWERS YOUR AIR TOOLS FOR LESS



SMITH 120-P COMPRESSOR

SMITH COMPRESSORS ARE IN USE THE WORLD OVER



SMITH 45-P COMPRESSOR



WRITE FOR FREE LITERATURE

Ask any Smith Compressor owner about economy! He'll tell you how the Smith 75-P replaces big compressors on scores of jobs—adds to job profits! The 75-P operates one heavy-duty paving breaker—two medium-duty paving breakers—or one 45-lb. rock drill. Nearly all engine and compressor parts are instantly available at reasonable cost from your Dodge Truck dealer. The 75-P is powered by a Chrysler Industrial Engine, using 3 cylinders for power, 3 for compression. Designed for high compression with large valve area, smooth carburetion. Super-finished bearings and pistons; water-jacketed discharge area. Send coupon for free literature.

GORDON SMITH & CO., Inc.
483 College St., Bowling Green, Kentucky
Rush free literature on the Smith 75-P ☐ 120-P ☐
45-P ☐ (Check one or all.)

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Long Sault Rapids sealed off by key Seaway dam

A 55-foot gap in a cofferdam, extending from the Canadian mainland to Long Sault Island in New York, was closed, thereby sealing off the St. Lawrence River. Walsh Construction Co., New York City, completed the final link in the 1,440-foot cofferdam by dropping steel frames into the river and backing the frames up with tons of rocks.

Sealing off the rapids was a major phase in the Seaway development.

They have been a barrier to shipping since navigation on the river began. The main river flow is now being diverted through a cut south of the island and through the completed portion of the Long Sault dam.

Once the surplus water has been pumped from the blocked-off section of the riverbed, work will begin on the second half of the control dam. The pumping operation is expected to take about two weeks.

New division head named by D-A Lubricant

The newly formed Western Division of D-A Lubricant Co., Inc., Indianapolis, Ind., is headed by Robert J. Binford, Jr. The former sales manager for the firm was appointed sales

manager in 1950.

Binford's post of sales manager has been filled by the appointment of Charles R. Isaacs, who joined the company in 1955.

designed for
Safety...
engineered for
Strength

USF BARRIER-BEAM

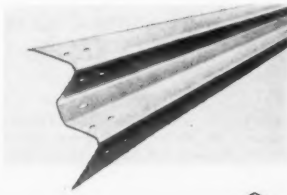
no other
guard rail offers
this built-in
safety
feature

An exclusive rounded safety-top that eliminates "knife-blade" potential of straight edges . . . broad surface areas for greater light reflectance . . . extra deep corrugation to provide high impact resistance and prevent pocketing . . . these and other features make USF Barrier-Beam your best buy in guard rail. Erects fast, too . . . all splicing is accomplished off post. Full details and prices promptly furnished without obligation.

UNIVERSAL-BEAM—USF's top-quality interchangeable Guard Rail that eliminates need for multiple warehouse stocks.



Write for new
Guard Rail Book



UNITED STEEL FABRICATORS, INC.

PRODUCTS **WOOSTER, OHIO**

Hollow Metal Doors • Prefabricated Metal Buildings • Window Wells •
Highway Guard Rail • Bridge Flooring • Steel Forms for Concrete Bridge
Floors • Corrugated Metal Pipe • Sectional Plate Pipe and Pipe Arches

For more facts, use Reader-Reply Card opposite page 18 and circle No. 447

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 446

...For Real Protection against Shaft Leakage...



GREASE LUBRICATED MECHANICAL SEALS

CARVER PUMPS

... with grease-lubricated mechanical seals
... are your best guarantee for lightning fast
prime, outstanding performance and mini-
mum operating costs.

Depend on CARVER for the complete line of contractors pumps from 4000 G.P.H. to 250,000 G.P.H. Trouble-free and maintenance-free these CARVER PUMPS are "Your Best Buy for Better Performance!"

Write the factory or see your CARVER Distributor for complete information.



CARVER PUMP CO., 1404 Hershey Ave., Muscatine, Iowa

The quality name in pumps

For more facts, use Reader-Reply Card opposite page 18 and circle No. 448

MAN-SIZE 36" Kolman 'a Brute for Production!'



50' x 36" KOLMAN Portable Conveyor-Screen Plant with built-in feeder and wing walls on a Peter Kiewit Sons' Co. job in Montana.

Loads Out 15-Ton Trucks In Less Than a Minute

Here's the conveyor-screen plant that really puts it out! Contractors throughout the country are finding that the KOLMAN Model 101 comes through with top production under the severest operating conditions.

Shown above is the 50' x 36" KOLMAN plant owned by Peter Kiewit Sons' Co. It's capable of loading out these 15-ton trucks with highway base course material in less than a minute. No wonder they say it's a "brute for production!"

It carries a vibrating screen 8' x 48" without additional support, and the screen need not be removed for transportation—it just folds under out of the way.

LOOK AT THESE FEATURES

Self-cleaning tail pulley, bar type self-lagged head pulley, all anti-friction bearings, choice of greaseless or regular ball-bearing idlers,

pneumatic tires, separate clutch for individual operation of vibrating screen and conveyor belt, motor-to-ground controls, hydraulic hoist with "V" type carriage trucks for low road clearance, and self-cleaning steel belt cover.

The steel dozer trap with built-in plate feeder, available as optional equipment is an integral part of the conveyor and also fully portable. Model 101 KOLMAN Portable Belt Conveyor is available in 18 to 42-inch belt widths and in lengths as desired.

SEND for FREE literature

KOLMAN Manufacturing Co.

4922 West 12th St. Sioux Falls, S. D.

Send literature on:

- ☐ 101 Heavy-Duty Conveyors
☐ 202 "Junior" Conveyors
☐ Screens ☐ Feeders ☐ Traps

Quote price size or capacity

Name

Address

City

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 449

Average weekly earnings were higher in 1956 than in 1955 on all types of contract construction, owing entirely to higher wage rates. For the industry as a whole, weekly earnings in 1956 averaged \$101.65, or \$5.71 above the 1955 figure, according to the Department of Labor.

Average hourly earnings increased by 14 cents over the year to \$2.74, whereas the average workweek in 1956, at 36.4 hours, was a half-hour less than in 1955. On both building and nonbuilding, it was the shortest in several years. The December, 1956, weekly hours and earnings averages were up from November for all types of contract construction except highway and heavy construction.

Secretary of Labor Mitchell, on behalf of the Administration, has proposed three changes to the Taft-Hartley Act dealing with the construction industry, one of which may be of urgent importance to professional engineers in the industry. This proposed amendment would permit the NLRB to certify collective bargaining units without an election of the employees where there is a historical background of collective bargaining. The proposed language would authorize the employees of the contractor "in such unit as the Board may find is normally represented by the labor organization . . ." on a joint petition of the employer and the union.

The National Society of Professional Engineers has asked Secretary Mitchell for clarification of the proposed amendment regarding application to professional employees of construction contractors. The Society

says it wanted to determine whether the amendment would wipe out the separate voting rights of professional employees, now provided in the law. The inquiry to the secretary of labor pointed out past attempts by building trade unions to represent professional engineers and said that in view of the increased public works program this problem is apt to arise with increasing frequency. The recommended change is under careful study by NSPE on this point.

A \$365,000 "transfer" of interstate highway funds to the Labor Department for enforcement of Davis-Bacon wage determination provisions in the highway program has highway user groups up in arms.

The Labor Department usually uses its own money to enforce Davis-Bacon provisions in government contracts, with Congress never before providing "that the funds necessary for administering this Davis-Bacon Act with respect to specific projects were to be provided out of any other fund than the appropriation of the Department of Labor itself," says Rep. Hale Boggs (D., La.), sponsor of the Highway Revenue Act of 1956.

The \$365,000 "transfer" marks the second time funds have been "transferred" from the highway fund to the Labor Department. A supplemental appropriation bill passed by Congress shortly before adjournment in 1956 authorized payment of \$300,000 to the Labor Department from the trust fund.

Under the Highway Act, only the Bureau of Public Roads is allowed money from the trust fund "for administrative expenses," Boggs notes.

FOR 50 YEARS...
Finest in the Field!

Ask the contractors who use the Omaha Dragline Buckets. Learn how its wedge shape makes easier loading and emptying...its perfect balance for smoother carrying and dumping...its smoother interior, high arch, continuous lip makes it your best buy. Extra strength is built in at every point of strain. **Strike pay dirt now!** Complete information and specifications await your letter.

DRAKE-WILLIAMS MOUNT
• OMAHA, NEBR.

OMAHA
DRAGLINE BUCKETS

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adding that the provision was designed to halt such "raids" on the trust fund "by other federal agencies."

Leading the opposition against the \$365,000 "transfer" are the National Highway Users Conference and the American Automobile Association.

...

Following a hard-fought battle of the Indiana Right to Work Committee, a right-to-work bill was passed in Indiana by a vote of 54-42 in the house and 27-23 in the senate. Governor Handley, though taking a neutral position, held to his promise to allow the bill to become law without his signature despite pressure of shouting crowds of unionists who invaded the Capitol demanding a veto.

Under Indiana procedure in such cases, the bill was presented to the secretary of state by the governor for delivery to the state's 92 county clerks. It will become law when they certify it as received, which will be in July or August.

As an indication of the high feelings, it is reported that three of the Republican senators supporting the bill have received threatening telephone calls, and that Rep. Arthur Atwell, Democrat, co-author of the bill, was given state police escort to his home following the vote in the house.

Support for the right-to-work measure was evidenced when nine members of the UAW-CIO Local 57 at Fort Wayne, who claim to represent a majority of the more than 3,000 members of the local, filed suit to have the union shop clause stricken from their working agreement. They claim that the local voted out the union shop clause five years ago and

that it was foisted upon them against their will when a new contract was negotiated last fall. The group, which includes one of the oldest members of the local with some thirty-five years seniority, insists that the right to join or not join be returned to them. The new law will give them their freedom of choice.

The Indiana Right to Work Committee leaders have decided to continue the work of the committee in order to fend off the expected repeal movement at the next session of the legislature, which the union leaders will undoubtedly make.

This being the first of the major industrial states to join the right to work ranks, the action is already arousing interest in other such states.

...

The Wisconsin supreme court has ruled 6 to 1 that there is no legal recourse for Negroes who have been barred from union membership because of their race or color, according to press wire service reports from Madison.

The court's ruling is to the effect that the state's laws give the Wisconsin Industrial Commission authority to investigate, publicize, and make recommendations in cases of alleged racial discrimination, but that the agency's powers stop there.

In the case two Negroes who had been barred from membership in Local 8 of the Bricklayers' Union complained to the Industrial Commission. After an investigation, the Commission recommended that the union admit the Negroes. When the union failed to act, the issue was taken to the Wisconsin circuit court, Branch

(Concluded on next page)

... big D-6 bulldozer loads in just **2 minutes**...

... on **MILLER**
"OT"-13 DUAL TANDEM
Tilt-Top

Model "OT"-13
tandem \$2,295.00*



... and it takes only **ONE** man to do it!

You get all the speed... the easiness of Tilt-Top loading... combined with the BIG LOAD capacity of a low boy on MILLER'S "OT"-13 dual tandem. Whatever you haul... dozers, pavers, trenchers, front-end loaders or backhoes, you'll load them faster... slash between-job-hauling time with a MILLER Tilt-Top! The "OT"-13's over the wheel's platform provides a full 8 ft. width and nearly 17 ft. in length. Independent acting walking beams are mounted on trouble free Timken roller bearings... minimize jarring on rough ground. Save the cost of slower loading, more cumbersome trailers... with a Tilt-Top to suit your needs. Several different models from 3 to 13 tons capacity—all provide ONE man TWO minute loading. See these time saving, production boosting Tilt-Tops at your MILLER distributor today!

*F.O.B. Milwaukee
Complete with platform and tires.
Any optional equipment extra.
*Plus 10% Federal Tax

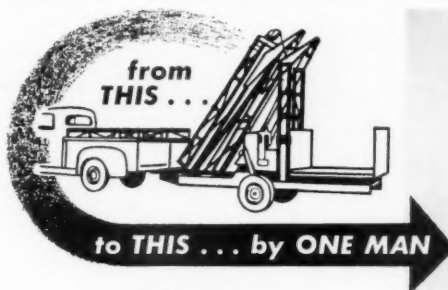
✓ **built best**
✓ **priced best**

See your MILLER distributor
or write for **FREE** literature to:

Miller
Tilt-Top Trailer Inc.

456 S. 92nd St., Milwaukee 14, Wis.

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in **23 Minutes**
with a Portable
BUCK Hoisting Machine

Speed and ease of erection—and ease of operation—save construction time and labor. So well balanced — efficiently designed — one man can erect this Buck Heavy-Duty Hoisting Machine. ACTION at 45 feet with a 2,000 pound load at one job—and ACTION the same day at another.

Contact one of the 73 Buck Dealers serving you or write direct:



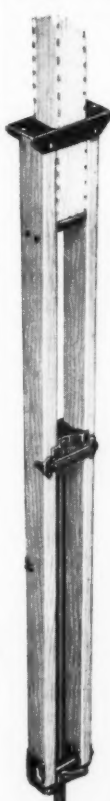
BUCK

EQUIPMENT CORP.

720-D Anderson Ferry Rd., Cincinnati 38, Ohio

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In Numbers There's Proof!



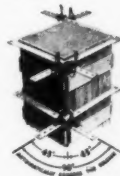
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USE AND RE-USE
ROOSHORS
EXTENSION TYPE

Thousands of contractors who use—and re-use—Rooshors and Rooshors, extension type, can't be wrong. They know them for their versatility, the ease with which they can be set... the time they save on the job.

The Rooshor, extension type, is a standard adjustable Rooshor with a flat steel head... into which can be inserted any length S4S 4 x 4 to reach whatever height is desired.

ROOS COLUMN CLAMPS

Two identical hinged units... that's all there are. No loose parts to misplace... no wrong way to put them together. Automatically and surely, Roos Column Clamps square the column forming.



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Company _____
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COUPON
TODAY**

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 453

(Continued from preceding page)

No. 4, Milwaukee County, which refused to order the union to open its doors to the applicants.

The lower court's reasoning in the case, which is upheld by the Wisconsin supreme court, was that the Wisconsin Fair Employment Act is of the "voluntary" rather than "compulsory" type, and contains no provisions for enforcement of Industrial Commission decisions. The lower court also held that neither the federal nor state constitution is of avail to the plaintiffs, since their guarantees of equal rights do not apply to voluntary organizations such as unions.

Reports on the state supreme court ruling quote it as stating that:

"The measures already taken by the

commission provide the entire remedy given to law. . . . We grant it is cold comfort to the appellants, but it is all the legislature saw fit to provide."

* * *

A review of the 67 union contracts negotiated during the first three months of this year and reported in Construction Labor Reports shows three interesting trends continuing at the industry's bargaining tables:

1. Over half of the 67 agreements will run for longer than one year;
2. More and higher fringe payments appear to be the rule; health-welfare insurance is still the most popular fringe benefit, but pension funds are winning wide acceptance;
3. Immediate increases are clustered between 10 and 16 cents, with the average at 14.6 cents.

Of the 67 settlements negotiated in January, February, and March, 12 will not expire for three years, and 23 more will run through 1958. All call for at least one automatic increase. Deferred increases coming at the end of the first year average 12.8 cents an hour; those due at the end of the second year average 10.5 cents an hour.

Eighteen per cent of the settlements include new fringe contributions. In five settlements, health-welfare programs are added; in six settlements, new pension contributions are negotiated; and in one settlement a publicity fund is established. Fringe contributions in all the contracts involved in the survey, including those added in latest negotiations, average 13.8 cents an hour. Twenty-two of the contracts call for health-welfare funds, ten provide for pensions, five have vacation clauses, three provide for apprentice funds, two call for holiday pay, and two call for publicity funds.

The highest immediate increase was negotiated by Carpenters' Local 43 in Hartford, Conn. The immediate 27½-cent pay boost came under a three-year agreement which calls for 10 cents more next year and an additional 10 cents in 1959.

The only settlement calling for no immediate increase at all was made in Los Angeles by Bricklayers Local 2. The contract, however, establishes a health-welfare fund which costs employers 8 cents an hour, and calls for a new publicity fund supported by a contractor contribution of 2 cents an hour. The two-year agreement will boost wages 5 cents an hour next year.

THE END

M-C&S awarded contract on Glen Canyon Dam

The largest single construction contract in the history of the Bureau of Reclamation was awarded to Merritt-Chapman & Scott Corp., New York, N. Y., for the Glen Canyon Dam to be erected near the Utah-Arizona line. The contract bid was \$107,955,522. It is on the Colorado.

The 700-foot high dam, which will take more than 7½ years to build, will be the third highest in the world—smaller than the Hoover Dam in Nevada and the Mauvoisin Dam in Switzerland.

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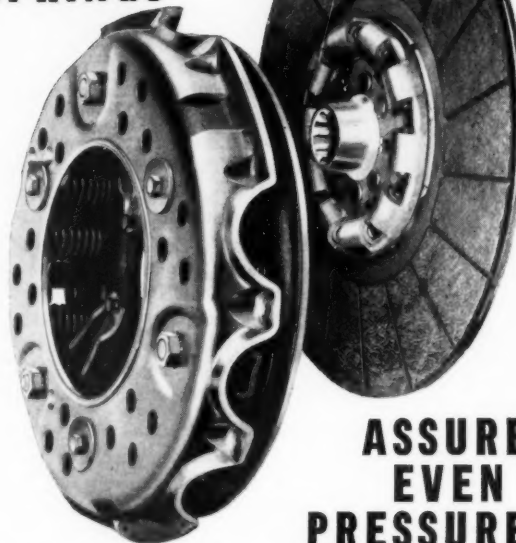
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CONTRACTORS AND ENGINEERS

A new industrial plant going up in Nashville, Tenn., gives urgency to the job being done on the sewer line trench by this Bucyrus-Erie 15-B transit crane with backhoe attachment. The work is being done by W. H. Singleton & Co., Washington, D. C.



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Two of 22 Etnyre units operated by Central Asphalt Inc., New Hartford, New York. A 1250 FX 400 Style D "Black-Topper" is shown loading 350-degree bituminous material from an Etnyre Hauling Tank equipped with low-pressure burners.

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Hard metals treated in new handbook

"A Handbook of Hard Metals", covering scientific principles of hard metals and their technical production, has been published by the Philosophical Library.

Hard metals in modern form are based on the hardness of the carbides of metals with high melting points, which are manufactured into suitable molded shapes, either by sintering the carbides in the form of powder or by melting. Alloys produced from hard carbides by sintering have proved to have greater technical importance.

The first part of the book deals with such subjects as the metallography of hard metal, the preparation of the powder mixtures for pressing, the process of sintering hard metal alloys, the properties of sintered hard metals, etc.

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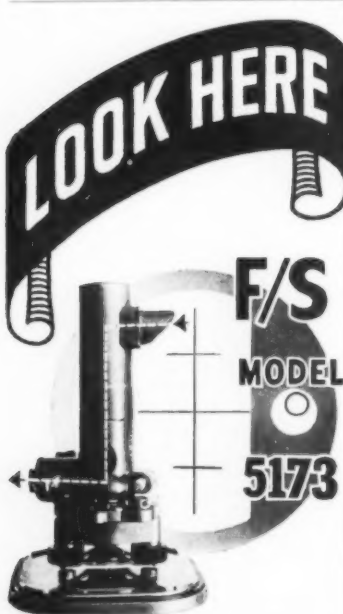
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Timken Roller Bearing Co.	
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Transport Trailers, Inc.	
Ettinger Adv. Agency	
Twin Disc Clutch Co.	
Curtiss, Quinlan, Keene & Peck, Inc.	
Union Wire Rope Corp.	
Potts-Woodbury, Inc.	
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Paulson-Gerlach & Associates, Inc.	

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In Sandy Clay...

Contractor Compacts 18" Lift in 2 Passes!

JOB: 12 mile sector of Four-Lane State Highway

SOIL: Sandy Clay

MOISTURE CONTENT: 8%

DEPTH OF LIFT: 18 Inches

COMPACTION CONTROLLED BY: State Highway Engineers

COMPACTION SPECIFIED: 95% Modified Proctor

COMPACTION OBTAINED: 100-102% Modified Proctor

NUMBER OF PASSES: 2

SPEED: 2 1/2 M.P.H.

COMPACTION COST: Approximately 2¢ per cu. yd.

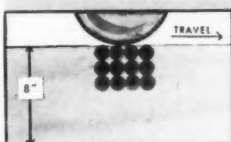


VIBRO-PLUS TERRAPAC VIBRATORY COMPACTION DID THE JOB!



The job described above is routine, designed to take full advantage of the "Terrapac" vibratory roller . . . The specs permitted the contractor to put down any lift he desired as long as he met the density requirements set-up by the State. The "Terrapac" CH30 enabled the contractor to put down one 18" lift, where at least two would have been required with a static roller . . . "Terrapac's" exclusive vibratory method permitted higher lifts

than is permitted when static rollers are to be used — then compacts faster, better and deeper in fewer passes . . . A "Terrapac" weighs only 3 1/2 tons yet outperforms ordinary 30-50 ton static rollers . . . Light weight permits use of small, rubber-tired tractors to keep hourly operating costs DOWN! . . . Ask your Vibro-Plus distributor for a demonstration — see what dynamic vibratory compaction can do for you on your own job!



CONVENTIONAL STATIC COMPACTION

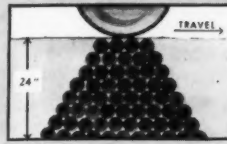
Rollers relying on weight alone provide friction forces between soil particles that prevent densification at any great depth.



VIBRO-PLUS PRODUCTS, INC.

TERRAPAC DYNAMIC COMPACTION

Vibratory forces, transmitted to soil in all directions, reduces friction — facilitates relocation of particles at greater depths.



WORLD'S LEADING SPECIALISTS IN VIBRATORY EQUIPMENT FOR OVER TWO DECADES!

AD. NO. 41-33

For more facts, use Reader-Reply Card opposite page 18 and circle No. 462

Surveying Washington

by HUBERT KELLEY, JR.

Restrictions on commercial advertising adjacent to the 41,000-mile interstate system are trying to be passed by Federal lawmakers as an addition to the Federal Highway Act. While the administration favors curbs, industry is sharply divided on the best approach. Whatever the outcome, a big battle on Capitol Hill looks inevitable.

In testimony before Senate roads subcommittee, headed by Sen. Albert Gore (D.-Tenn.), Secretary of Commerce Sinclair Weeks and Federal Highway Administrator Bertram D.

Tallamy outlined the government's proposal. The administration's suggested legislation would prohibit billboards or other advertising signs and displays within 750 feet of the edge of the paved surface of an interstate highway. Exceptions would include signs advertising the sale or lease of property on which they are located; signs advertising the activities of the property on which they are located; and signs on zoned industrial or commercial land.

Under the proposal, the states would not have to enter agreements

with the government to control advertising, but failure to do so by July 1, 1960, would result in withholding five per cent of the federal-aid funds to the interstate project where there was no control. Secretary Weeks termed this provision an "incentive" for control, adding that "we do not believe the percentage withheld should be so large as to delay or interfere with completion of the interstate system in states unwilling or unable to control advertising in accordance with the national policy."

The cost of acquiring the ease-

ments along the land adjoining the superhighways so as to control advertising would be borne by the states alone. Mr. Tallamy estimated the cost at around \$6,000 per mile.

The administration argued that such a control plan is necessary to provide an interstate system making for uniformly safe, relaxed driving and pleasing appearance because state regulations on advertising are "varied in scope and effectiveness."

"The amount of traffic that will go to the interstate system," Mr. Tallamy testified, "is proportionate to a great extent, in my opinion, to the aesthetic character of the system and the lands adjacent to it. If the system is not properly designed or built, from an aesthetic point of view—if the lands adjacent to it become ugly and unattractive—you will find a lot of traffic, which should be using the interstate system on holidays and weekends, cluttering up the old highways."

"And when that happens we are going to be called upon to expend more money widening and improving the old highways."

The highway administrator also contended that commercial billboards would be an acute safety hazard by distracting drivers using the high-speed thoroughfares.

In any event, he argued, there is going to be almost no room for commercial billboards because of the frequency of official traffic information signs advising motorists of road conditions, interchanges, and commercial facilities just off the interchanges. Since these signs will extend three miles on each side of an interchange and the average distance between interchanges will be only eight miles, he explained, the space for commercial advertising will be quite limited.

Some advertising control is desirable, Sen. Gore indicated, but he had his doubts about the government proposal. He thought the lawmakers would be reluctant to accept the five per cent withholding provision, which he said would amount to "penalizing" the states "by reneging on the 90 to 10 matching formula which the Congress has approved."

Instead, Sen. Gore suggested extending the "carrot instead of the stick" by authorizing federal financial assistance in building roadside parks, rest facilities, and so on to states that voluntarily agree to regulate outdoor advertising on their own.

Many organizations testifying agreed with the administration that billboard regulation is necessary for safety, preserving scenic beauty, and maintaining roadside property values. Typical of the comments of this faction were those of the American Automobile Association and American Institute of Architects. AAA said uncontrolled roadside development cre-

diggs at any angle
...from any position!

HIGHWAY HEAVY-DUTY
"Swing-Base"
EARTH-BORING MACHINE



Exclusive!
Highway Telescoping Derrick

The telescoping derrick (3500-lb. capacity) can be extended 28 ft. 6"—derrick retracts for convenience of operation. Available as optional equipment on the Model "HC" and "HCMS" Swing-Base machines.

Digs the Hole and Sets the Pole in any Soil!

FASTER, EASIER POSITIONING . . .
efficient trouble-free digging at any angle —

Highway's "Swing-Base" Earth-Boring Machine allows the operator to rotate the auger 180° — extend it up to 22° — and dig at any point within the arc and within the forward and aft traverse. Both movements are hydraulic, allowing fingertip control.

This heavy-duty unit can be mounted on either a single rear axle truck or a tandem. Outstanding features include hydraulic stabilizing jacks (retractable for traveling position), integral winch, telescoping derrick, and headache rack. The live boom in traveling position requires only 123" clearance. The Earth Borer will dig 9" to 36" holes in any soil, faster and easier than ever before. Leveling mechanisms allow for digging at an angle, and the versatile swing-base platform allows exact positioning regardless of location or angle of the truck.

UTILITY DIVISION
HIGHWAY TRAILER COMPANY
Headquarters: EDGERTON, WISCONSIN

Manufacturers of Public Utility Bodies • Earth-Boring Machines • Pole and Cable Reel Trailers • Winches • Power Take-Offs • Service Accessories • Commercial Trailers • Trailerized Tanks and Dry Bulk Haulers

SALES AND SERVICE IN PRINCIPAL CITIES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 463

ates blight which cuts traffic capacity and "eventually necessitates costly reconstruction or relocation of the highways." AIA said it would be "criminal irresponsibility" if anything marred the beauty and efficiency of the roads built by our highway engineers.

Testimony against any federal intervention in advertising was based principally on the contention that there is no evidence that billboards are safety hazards, that businesses depending on highway traffic would be damaged, and that regulation on the state and local level is sufficient.

The anti-forces were led by motel, outdoor advertising, and union organizations, but they were not alone. For instance, J. Carl McMonagle, president of the Institute of Traffic Engineers, testified that many studies showed that billboards, if properly placed and spaced, have no adverse effect on traffic safety. "I am of the opinion," he said, "that billboards help relieve the driving monotony in many instances and thus add to, rather than detract from, safety on highways."

W. A. Bugge, president of the American Association of State Highway Officials, said a poll of state highway departments indicated most favored billboard regulation. But he criticized the administration's five per cent "penalty" proposal, claiming it would be a "breach of good faith" to add a condition to the 90 to 10 matching formula and that enactment of the plan "would definitely impair the states' confidence in the whole highway program."

He added that the next time "it might be 10 per cent for still another item or condition."

Mr. Bugge also disliked the idea of putting the entire financial burden of buying roadside rights on the states. He said it would add "to an already serious problem in many states of meeting the increased federal-aid matching requirements and still supplying state funds to construct the many other roads in the state that are of prime importance at the local level. To absorb a five per cent penalty, even on a 'project-by-project' basis, would create an impossible situation in some states."

He suggested the cost of roadside control be paid for as part of the over-all highway program and on the same basis of federal participation.

Alternate billboard control legislation, sponsored by Sen. Richard Neuberger (D-Oreg.), does provide for the federal government's bearing 90 per cent of the cost to any state of buying up advertising rights within 500 feet of the right-of-way of an interstate highway. States would not have to accept this federal control standard, but those that do would be reimbursed.

The Neuberger bill, however, is op-

posed by the administration as being too weak. Secretary Weeks said the reimbursement would not be a "sufficient incentive for the states to take action" to regulate advertising in line with a national standard.

In general testimony on the progress of the highway program, Mr.

Tallamy told the roads subcommittee that construction was now on schedule, but that tough obstacles loom ahead.

Mr. Tallamy thought it likely completion of the program would take 16 rather than 13 to 15 years.

The administrator expressed con-

cern about the steep rise in the price of structural steel. He added, however, that he was not too worried about any shortage of the material slowing up construction because of the new use being made of prestressed concrete as a substitute.

THE END

ANOTHER CATERPILLAR FIRST!

CERTIFIED POWER

FOR CAT* DIESEL ENGINES

In a quarter century of diesel leadership Caterpillar Engines have achieved a reputation for *honestly rated power*. Owners have found that they can depend on a Cat Diesel to deliver the power promised.

Now, to back this reputation, Caterpillar becomes the *first* manufacturer to issue a certificate showing the horsepower capabilities of the engine. This certificate is signed by Caterpillar Tractor Co. and certified by a notary public.

You have a right to demand *certified power* when you invest in an engine. You get it when you buy from your Caterpillar Dealer. Let him show you the certified power plant that fits your needs.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR TRACTOR CO.

ENGINE POWER CERTIFICATION

This is to certify that the Diesel Engine herein described has been engineered, manufactured and tested in accordance with rigid Caterpillar Standards. The materials and workmanship incorporated into this engine give it the inherent capacity for satisfactory performance when applied in accordance with the power ratings established and recommended by this company. The MAXIMUM OUTPUT capacity of this standard production engine is 200 H.P. @ 2000 R.P.M. equipped with: air cleaner, water pump, lubricating oil pump, fuel pump, and standard intake and exhaust manifolds.

I certify that B. L. Henson, Supervisor of Diesel Engine Test, Caterpillar Tractor Co., is duly qualified to certify and I affix my signature and seal on this day of February, 1957.

B. L. Henson
Supervisor Diesel Engine Test
Caterpillar Tractor Co.
Peoria, Illinois

_____ was manufactured and

Caterpillar Model D326 Industrial Shipping Date February 11, 1957

shipped as follows: Engine Serial No. 39B1018 Power Rating Intermittent

Power Setting 152 H.P. @ 1600 R.P.M.

<u>Radiator & Fan</u>	<u>Tachometer Drive</u>
<u>Ether Starting Aid</u>	<u>Muffler</u>
<u>32V Charging Generator</u>	<u>Heater Connections</u>
<u>Governor Control</u>	<u>Remote Shut-off</u>

POWER RATINGS

MAXIMUM OUTPUT is the horsepower capacity of the engine, a measure of the maximum power, 4 1/2% that can be developed for five minutes without drop in speed.

INTERMITTENT HORSEPOWER is a rating for use in variable load applications such as excavators, hoists, and standby power units, where the duration of sustained full power output is one hour or less, with the average output not over 50% of Intermittent Horsepower.

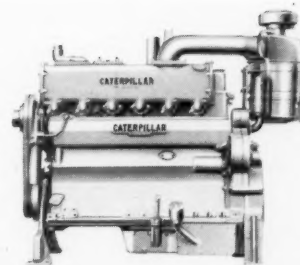
RATED HORSEPOWER is a rating for use in applications such as planing mills, hammer mills, and rock crushers where the duration of sustained full power output is 12 hours or less.

CONTINUOUS HORSEPOWER is a rating for use in applications such as work boats and pumps where the duration of sustained full power output is 24 hours per day, day in-day out.

Horsepower figures are established in accordance with rigid Caterpillar standards. All ratings, corrected to sea level barometric pressure (29.92 in. Hg.) and standard temperature (60°F.), apply to a production engine including air cleaner, water pump, lubricating oil pump, fuel pump and standard intake and exhaust manifolds. The above ratings are based on British and American BHP.

Printed in U.S.A.

FORM NO. 515-32552



CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.



For more facts, use Reader-Reply Card opposite page 18 and circle No. 464



High altitudes, narrow benches severely test this Michigan, yet every day it loads **400 tons of rock weighing 5,400 lbs per cu. yd.**

Up in the scenic Sapphire Mountains of southwestern Montana, Cummings-Roberts Company has one of the toughest rock-loading jobs you could find anywhere.

Part of the time, they blast and load coarse mountain-top granite . . . summer and early fall, they load fluorspar. No one needs to detail what a severe test the heavy, rough granite overburden gives to *any* loader. Fluorspar, however, is even worse. A heavy rock mineral, it weighs 5,400 pounds per cubic yard—over 850 lbs more per yard than in-bank granite (and 2,200 lbs more than pit-run gravel).

Proved by demonstration

Over the years, Cummings-Roberts has tried just about every kind of loader made. Last year to increase efficiency, their Michigan distributor, Miller Machinery Co., Missoula, suggested a Model 175A Michigan Tractor Shovel. "Frankly," Cummings-Roberts officials told them, "we don't believe *any* rubber-tire unit can load the stuff, much less do the work day in and day out. But we'll give it a try."

Result? John Taber, General Superintendent, wouldn't let them take the Michigan off the job.

Heaped loading assures proper blending

Today, the 133 hp 2¾ yard Michigan handles all loading of the super-heavy fluorspar. Produc-

tion, with trucks on 600 ft one-way hauls to crushing mill, averages 400 tons per 7-hour day. The fluorspar, incidentally, varies considerably in grade from place to place throughout the mine. It must be blended to give the grade desired for shipment . . . and this assignment goes to the Michigan, too. Its 27 mph mobility is a vital asset on this scattered loading; trucks never wait more than a few minutes for loading service.

Strips granite overburden — 500 tons per day!

In late autumn and sometimes in spring, the Michigan strips the granite overburden. Output averages 500 tons per 7-hour day.

Downtime negligible

With all this rugged loading of super-heavy material, plus repeated back-and-forth maneuvering on narrow benches, plus continuous work at high 7,000 ft altitudes, the torque converter equipped Michigan has posted an excellent mechanical record. *To date, it has had only one minor breakdown!*

Also tows compressors, speeds other odd jobs

Operator Don Lindblom likes Michigan's power-shift transmission, says its bucket action is the best he's ever worked with. "You can tip it back and fill it easily," he says. "I like the fact also that it takes

only half-an-hour per day to refuel and lubricate." Foreman Waino Lindblom adds, "The Michigan has done a very nice job for us! We particularly like its truck-like speed in moving from level to level and bench to bench." This mobility gives the Michigan some "spare time" to handle maintenance jobs scattered along some 15 miles of mountain roads—cleaning rock rubble off benches so trucks and wagon drills can get through . . . hauling air compressors . . . digging culverts . . . even plowing snow.

Got a tougher job than this?

There *may* be a tougher materials-handling job than loading granite and fluorspar . . . but we're willing to bet a Michigan Tractor Shovel can do it faster, better, at lower cost than any other machine. To prove it, your Michigan Distributor will be glad to arrange a demonstration at *your* convenience. *You pick the jobs.*

Michigan is a registered trade-mark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division
2407 Pipestone Road
Benton Harbor 33, Michigan
In Canada: Canadian Clark, Ltd., St. Thomas, Ont.

CLARK®
EQUIPMENT

For more facts, use Reader-Reply Card opposite page 18 and circle No. 465

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